ELECTRICAL REVIEW

FOUNDED 1872

Vol. CXXXI. No. 3379. AUGUST 28, 1942 6d. WEEKLY

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SEP 17 1942
DETROIT

BTH LIGHT-CONDITIONING
UP-GRADES THE SEMI-SKILLED

Poor lighting is a much greater handicap to the semi-skilled than to the skilled worker. The improvement of factory lighting up to the standard prescribed by the BTH Light-Conditioning Code is the quickest and simplest way of putting new workers on the same level of production as the "old-timers."

BTH

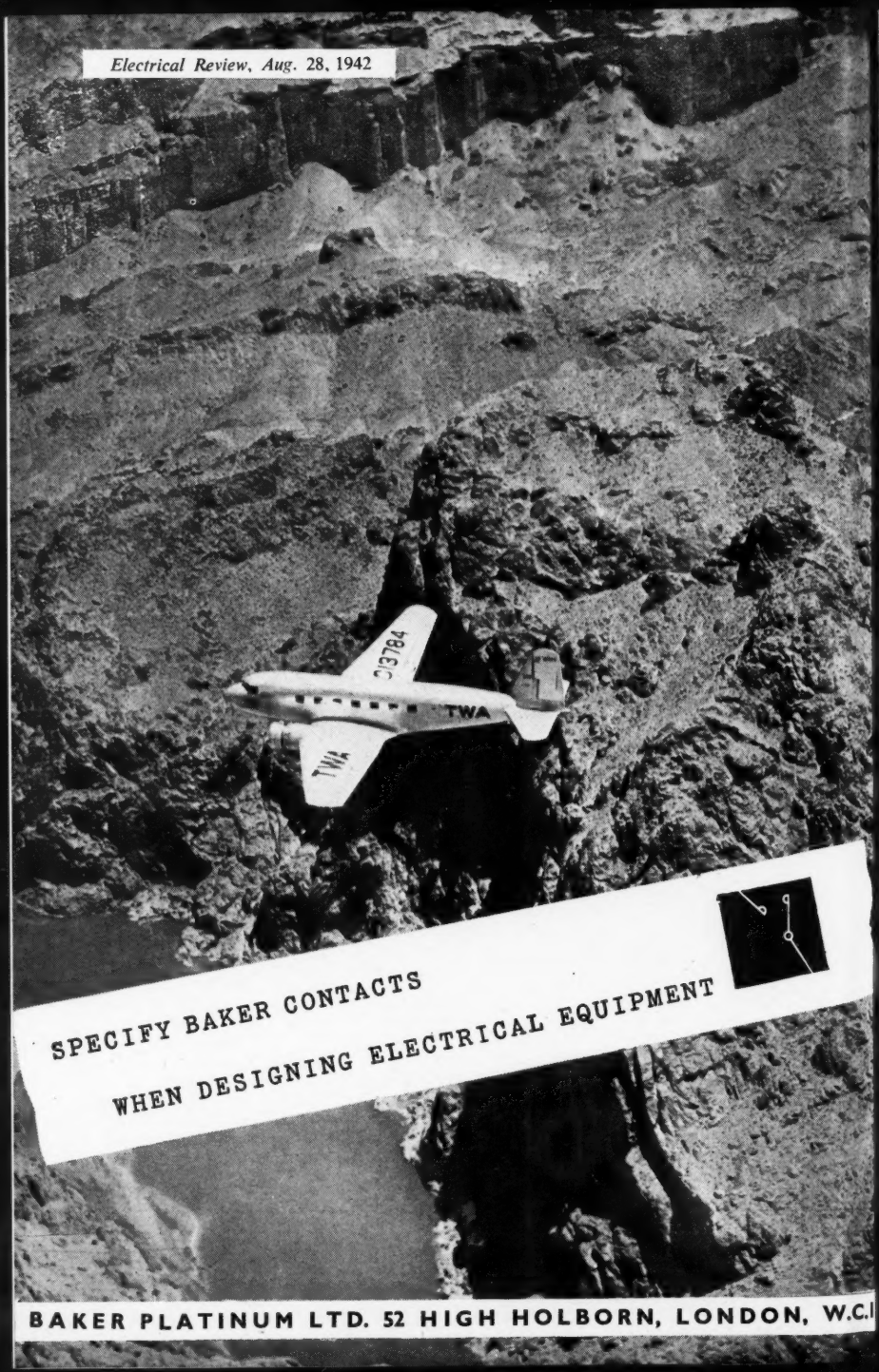
Let BTH Lighting Engineers help you to plan efficient lighting for production and welfare.

MAZDA Lamps
with MAZDALUX Equipment

PT 3960

BTH for all Electrical Plant and Equipment

THE BRITISH THOMSON-HOUSTON CO. LTD., CROWN HOUSE, ALDWYCH, LONDON, W.C.2



SPECIFY BAKER CONTACTS

WHEN DESIGNING ELECTRICAL EQUIPMENT

BAKER PLATINUM LTD. 52 HIGH HOLBORN, LONDON, W.C.I

HEATRAE

AN ESCUTCHEON HELD HIGH FOR

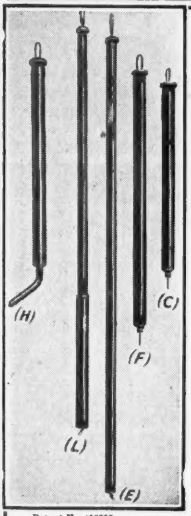
PROGRESSIVE DESIGN

The whole trend of Nature has always been towards development and the evolution of new species.

That, too, is the ever-impelling evolutionary feature of Heatrae progress in the "anatomy" of Electric Water Heaters.

Leaders in Electric Heating

HEATRAE LTD., NORWICH • PHONE : NORWICH 25131 • GRAMS : HEATRAE, NORWICH



Patent No. 519919

IS IT ALIVE?

THE "PARTRIDGE" PRESSURE DETECTOR

(Regd. T.M. No. B.581955)

will infallibly tell you, giving visible and audible indication

(No earth connection required)

Type	Range up to	Length of handle
C	Volts 11,000	36"
E	60,000	84"
F	15,000	48"
H	11,000	36"
L	33,000	72"

Also makers of "Westminster" Vacuum Tube Detector and H.T. Earthing Rods

The WESTMINSTER ENG. Co. Ltd.

Victoria Road, Willesden Junction, N.W.10

Telephone: Willesden 1700-1 *Telegrams: "Regency, Phone, London."*

TAG TERMINALS

FOR WIRELESS AND SIMILAR CONNECTIONS

A WIDE RANGE OF SIZES IN STOCK

ROSS COURTNEY & Co. Ltd.

ASHBROOK ROAD, LONDON, N.19

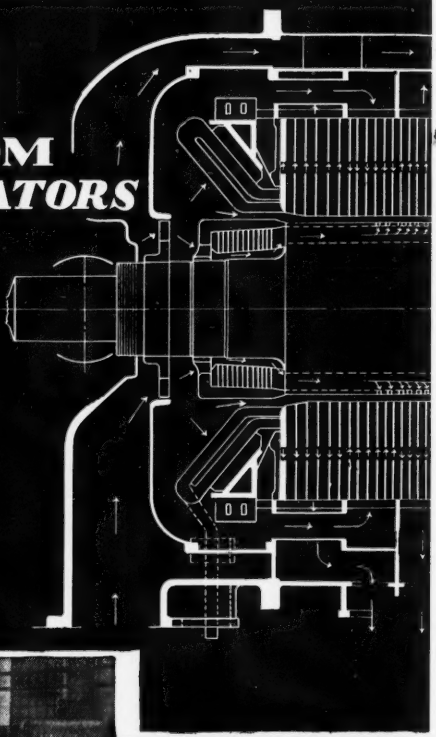
COUPLING PIECES

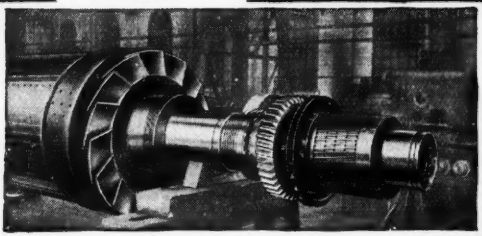
to the specific requirements of our customers.

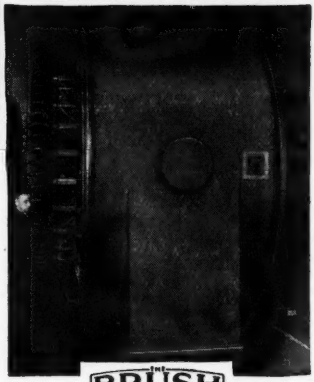
Makers of all types of repetition products from the bar in all metals.

M-C-L and REPETITION LTD. Pool Lane, Langley, Bham.

LARGE
BRUSH
LJUNGSTRÖM
TURBO-GENERATORS





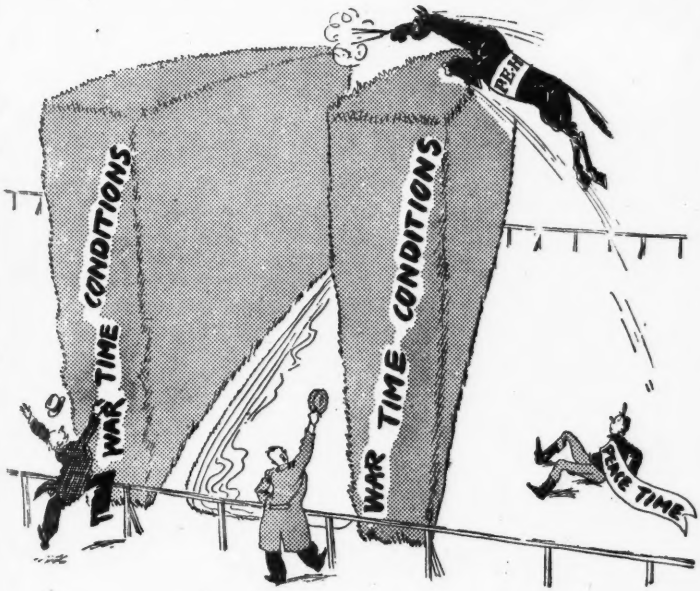


No. 9
ALTERNATOR
VENTILATION

- Closed Circuit System with Integral Ventilation.
- Modern Aerodynamic Principles embodied in self-contained Fans.
- Distributed Short Length Air Paths.
- Air Flow direct to Cooler supported by Stator Frame.
- Foundation Arrangements Eliminated.

THE BRUSH ELECTRICAL ENGINEERING CO LTD LOUGHBOROUGH ENGLAND

5.62



Don't think we're not trying . . .

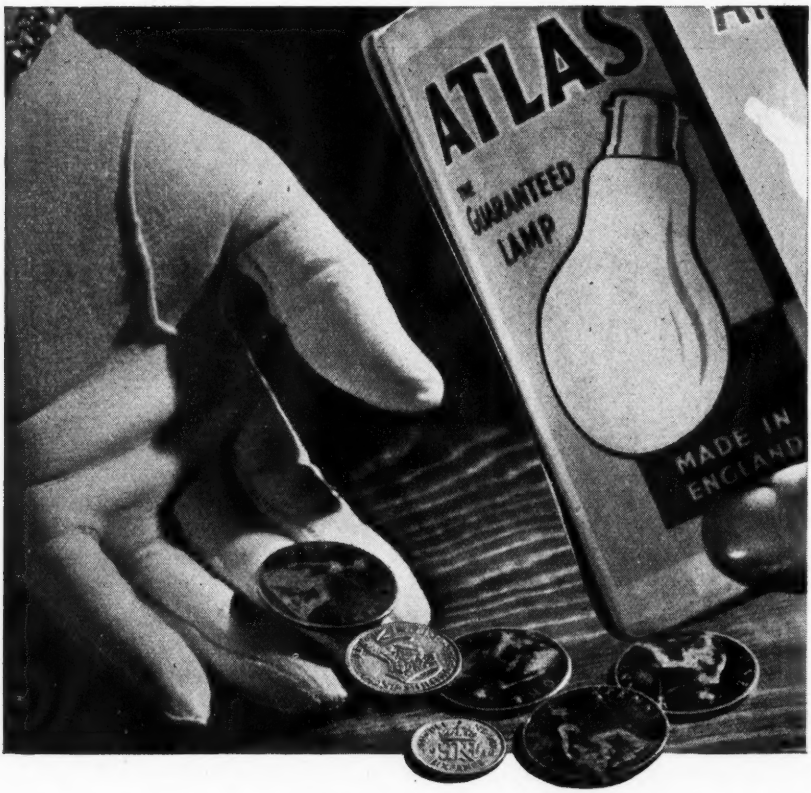
When you call on us for a little service don't think we're not trying if we can't do just *what* you want *when* you want it. If you knew the total amount of service we are *still* giving our old friends (by way of limited supplies of apparatus and repairs) you'd probably be surprised. But the total has to cover a lot of ground these days.

PREMIER *Fine-Quality*

electric heating appliances, including the famous "Laundwell" and "Smoothwell" electric irons; "Quickset" and "Pylon" electric kettles; electric fires; toasters; coffee percolators; multi-boilers, glue-pots and other appliances.

PREMIER ELECTRIC HEATERS LIMITED · BIRMINGHAM, 9

A*



Mrs. Brown comes back for more!

When Mrs. Brown finds a shop where she gets better value for her money she naturally comes back again and again. She becomes a regular customer of that shop. Every week Mrs. Browns by the thousand are discovering that Atlas Lamps give them more light for less money. Perhaps that is why so many Atlas Lamps are used by Government Departments, Railway Companies and other big undertakings. Push Atlas Lamps and you will get more regular customers, as well as bigger profits on every sale.

ATLAS LAMPS

If you are not yet stocking Atlas Lamps, drop a Postcard for particulars to

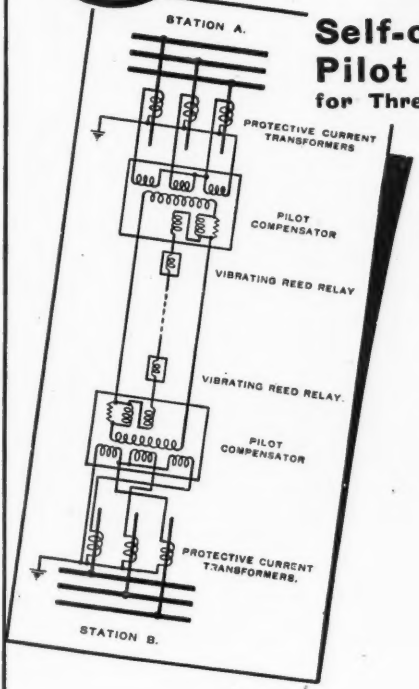
THORN ELECTRICAL INDUSTRIES LTD., ATLAS LAMPS DIVISION, 105-109 JUDD STREET, LONDON, W.C.1.
Telephone: Euston 1183 (7 lines). Telegrams: "Eleclampo, Kincross, London."

Northern Branch: 55 Blossom St., Manchester. 'Phone: Central 7461-2-3. 'Grams: "Eleclampo, Manchester."
North Eastern Depot: 46 Sandhill, Newcastle-on-Tyne, 1. 'Phone: Newcastle 24068-9. 'Grams: "Macu, Newcastle-on-Tyne."
Scottish Depot: 200 St. Vincent Street, Glasgow. 'Phone: Central 4015 (*Pte. Branch Ex.*) 'Grams: "Calyou, Glasgow."

PROTECTIVE GEAR

Self-compensating Pilot Wire System

for Three-phase A.C. Feeders



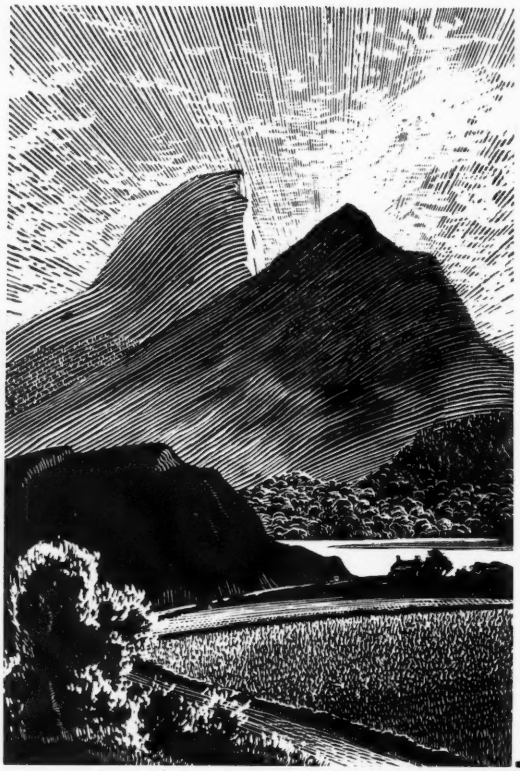
- High speed tripping without loss of transient stability.
- Direct tripping at both ends with fault current fed from either or both ends.
- Unsheathed pilots. No break in continuity over the entire length of feeder.
- Low fault-current sensitivity. Relay of simple and robust construction, vibrating reed type.

The BTH Company manufactures a complete range of Protective Gear for all essential points of an A.C. System.

BTH

THE BRITISH THOMSON-HOUSTON CO., LTD.
CROWN HOUSE, ALDWYCH, LONDON, W.C.2.

A2715



Peculiar Prattle

• AS OLD AS THE HILLS •

An expression frequently used, metaphorically, to denote age and stability.

It might well be applied to Wire, Wire Ropes, and Hemp Cordage. They may not be quite "as old as the hills" but they are, nevertheless, products of very ancient industries.

Their stability, too, has been tried and tested throughout the ages.

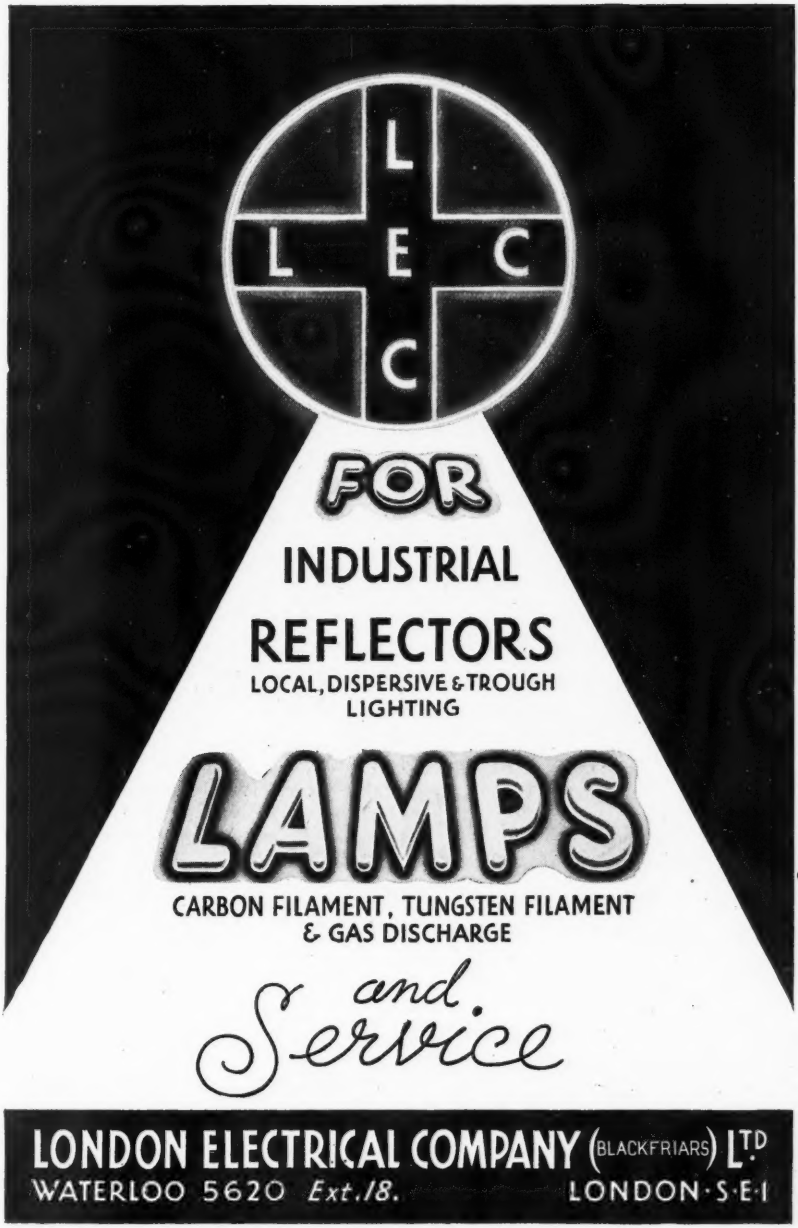
Then, as now, they have played their part.

They will continue to do so in the years to come.

Head Office :
DONCASTER

Works throughout Great Britain

BRITISH ROPES LIMITED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FOR
INDUSTRIAL
REFLECTORS
LOCAL, DISPERSIVE & TROUGH
LIGHTING
LAMPS
CARBON FILAMENT, TUNGSTEN FILAMENT
& GAS DISCHARGE
and
Service
LONDON ELECTRICAL COMPANY (BLACKFRIARS) LTD
WATERLOO 5620 Ext. 18. LONDON · S·E·1

BETTER LIGHTING
MEANS
GREATER OUTPUT

D & G GIRDER FITTING

FOR MACHINE TOOL AND BENCH LIGHTING

- Universal movement
- Concentration of light on the job
- Protects operators' eyes from glare
- Lower consumption
- Less lamp breakages

Made in Single-, Two- and Three-arm Extensions

Adopted by many of the Armament and other War Production firms

DRAKE & GORHAM WHOLESALE LTD.

77 LONG ACRE, LONDON, W.C.2

Telephone : TEMple Bar 3993

MANCHESTER: 29 Piccadilly. BRIGHTON: 24 Marlborough Place. GLASGOW : 182 St. Vincent Street. BRISTOL : 35 Broad Street. DUBLIN : 2 Church Lane, College Green

Midland Representative:
W. T. BOWER, 184 Lockey Road, Sutton Coldfield

Queen Victoria had just become Empress of India when SIEMENS became established at Millbank and during the years of peace that followed when the commercial might of England grew, no greater name than SIEMENS for first-class quality equipment became known in Electrical Engineering Circles.

The Company's products such as Cables, Telephones, Batteries, Electric Lamps, and Supplies for the Electrical Distributing Trade have become world renowned.

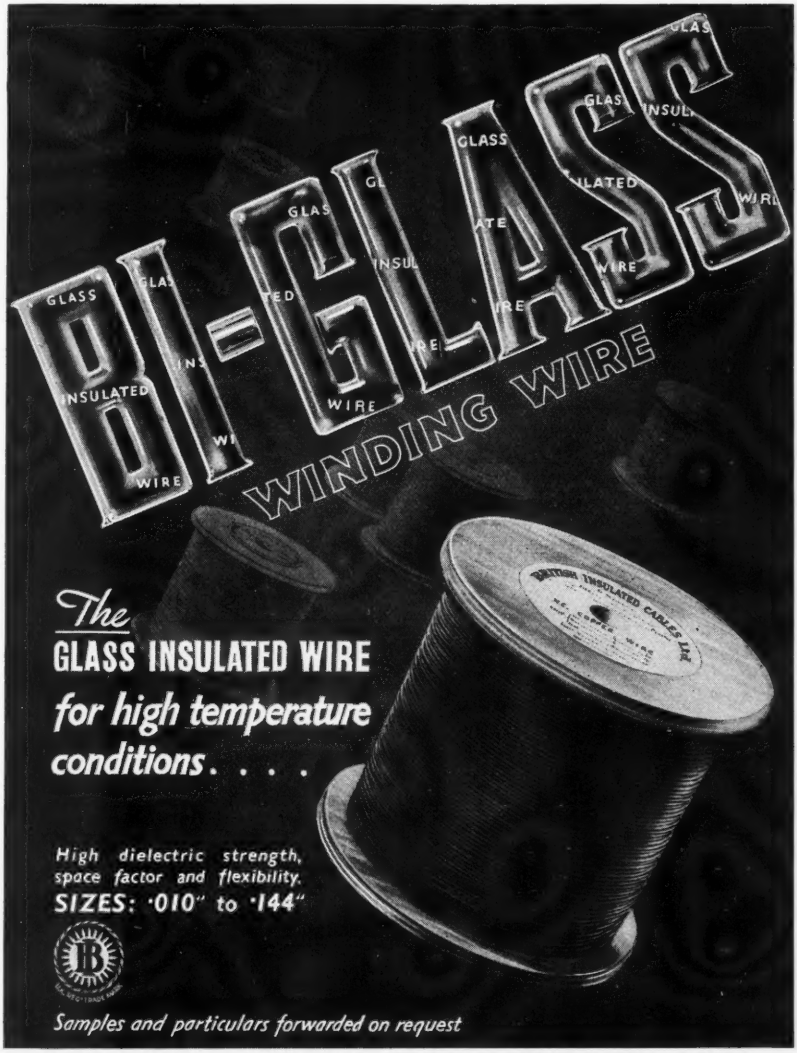
To-day the services of the Company are fully occupied.

Our friends will fully understand our present position and can rest assured that when normal trade conditions are again possible our products, with their high reputation, will be made fully available to them.

SIEMENS

MANUFACTURING ELECTRICAL ENGINEERS

Advt. of SIEMENS ELECTRIC LAMPS AND SUPPLIES LIMITED, 38/39 Upper Thames Street, London, E.C.4, and Branches.



The
GLASS INSULATED WIRE
for high temperature conditions. . . .

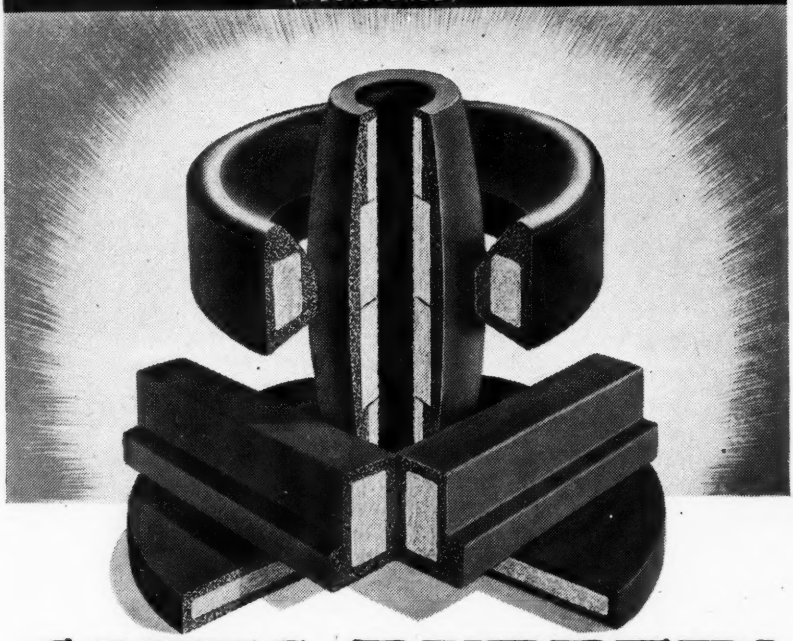
High dielectric strength, space factor and flexibility.
SIZES: ·010" to ·144"

Samples and particulars forwarded on request

BRITISH INSULATED CABLES LTD
Head Office: PRESCOT • LANCS. Tel. No., PRESCOT 6571

"RELT"

(REGISTERED)



SAVES RUBBER!

"Relt" is a new technique in rubber moulding (Patent applied for). It is just one of the results of the extensive Research drive which we have made, with the object of saving rubber.

"Relt" mouldings have a fibre core surrounded by a rubber corral. They can be made in varying degrees of resilience and in some cases have advantages over the normal type of rubber moulding.

"Relt" mouldings compared with pure rubber mouldings are 50% to 75% lighter in weight and they save up to 75% of rubber.

"Relt" is an answer to the rubber shortage.

SEND US YOUR ENQUIRIES FOR "RELT" MOULDINGS BUT MAKE SURE TO TELL US JUST WHAT YOUR COMPONENT HAS TO DO. OUR COMPLETE TECHNICAL SERVICE IS AT YOUR DISPOSAL.

EMPIRE RUBBER Co

Phone: DUNSTABLE 533

DUNSTABLE - BEDFORDSHIRE

Grams: SPANDIT, DUNSTABLE

Technicians in Flexible Components

GOOD MANAGEMENT *demands*

GOOD MEASUREMENT

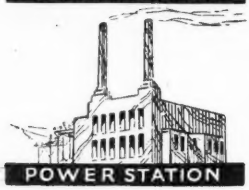
Good management means the best utilization of your electricity supplies. Accurate and reliable measurement helps to secure this, so always specify—

FERRANTI

Instruments

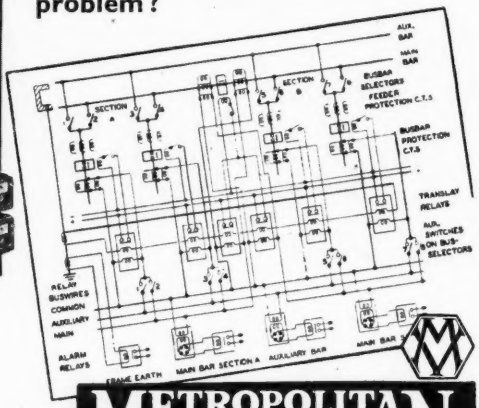
F151

FERRANTI LTD., Hollinwood, LANCS. *London Office: Bush House, Aldwych, W.C.2.*



All these have BUSBARS *Are they properly* PROTECTED?

We have schemes to suit them all. May we help to solve your particular problem?



METROPOLITAN Vickers ELECTRICAL CO. LTD.
TRAFFORD PARK · MANCHESTER 17.

G/E202

COSMOS LAMPS *Metrovick's 'light' product*

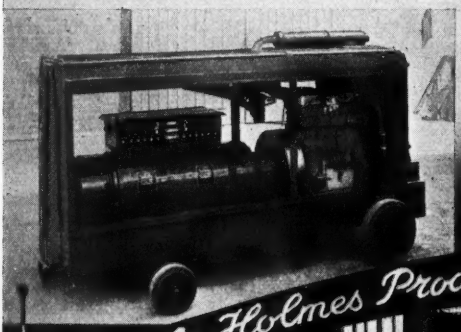
Callender CABLES

CALLENDER'S CABLE & CONSTRUCTION CO. LTD. HAMILTON HOUSE, VICTORIA EMBANKMENT, E.C.4

Branches everywhere

A TWO-OPERATOR WELDER WITH DROOPING CHARACTERISTIC

ON THE LINES OF THE HOLMES TYPE-B WELDER WITH COMPLETELY LAMINATED MAGNETIC CIRCUIT AND SPECIAL INJECTOR FIELD CONNECTIONS



A Holmes Product

DRIVE BY ENGINE (AS ILLUSTRATED) OR BY A.C. OR D.C. MOTOR

20 TO 300 AMPERES FOR EACH OPERATOR
OR 40 TO 600 AMPERES FOR A SINGLE OPERATOR

FURTHER PARTICULARS IN PAMPHLET No. 1098

REYROLLE

HEBBURN-ON-TYNE ENGLAND

ROLLING HOME!

HAVE you ever seen a windjammer rolling home? It is a lovely sight, seldom seen in these days of mechanisation!

Another sight, even lovelier to us—at the moment—is the "rolling home" of our Cable drums.

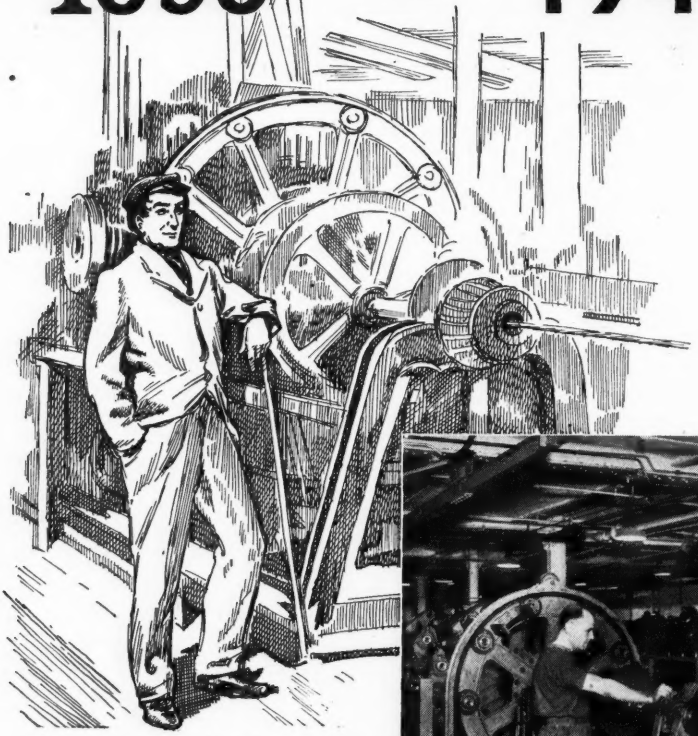
Will you, metaphorically speaking, put your shoulder to the wheel and send those Drums "rolling home" to our Works? We need them badly!

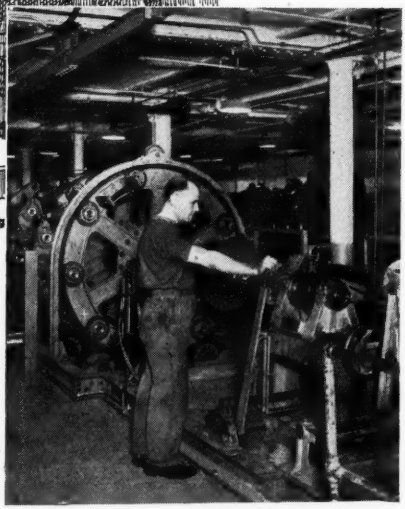
The ENFIELD Cable Works Ltd

VICTORIA HOUSE, SOUTHAMPTON ROW, LONDON, W.C.1

Telephone :—Holborn 0591 (4 lines.) Telegrams :—"ENFELCAMA, PHONE, LONDON"

1898 — 1942





AN artist's impression of copper wire stranding at the Woolwich factory in 1898, which should be compared with the same operation in 1942.

Modern machines, constant alertness and a close attention to every phase of the job during its manufacture show how vastly methods have been improved.

Standard POWER CABLES

Advertisement of Standard Telephones and Cables Limited, North Woolwich, E.16

DISTILLED WATER

. . . has hitherto only been obtainable by "Distillation." It is possible to-day by The **Permutit** Company's new and exclusive **"Deminrolit"** process to obtain large quantities of its equivalent cheaply and simply. This revolutionary process has already found its place in World Industry and plants are in operation for varied uses including Boiler Feed. It is fully described in our Booklet:—

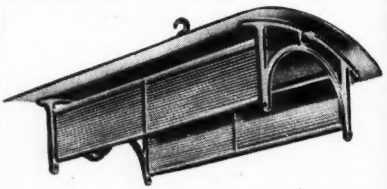
DISTILLED WATER WITHOUT DISTILLATION

Write for a copy to—The **PERMUTIT** Company Limited, Dept. T.W., Permutit House, London, W.4.

Telephone: CHIswick 6431 Cables: Permutit, London

5 ELECO fittings

For the new Improved Factory Lighting Schemes



1 The **"Duo-Beam"** Fitting for horizontal burning Sodium or Mercury Discharge Lamps.

2 **Eleco** general purpose fitting.

3 The **S.L.R.** fitting. Despatched completely wired. No heating of the wiring cables.

4 Elliptical angle reflector. For all positions where forward distribution of light is required.

5 The **"Tilbury"** fitting. Very robust design for high mounting up to 50 ft.

Factories (Standards of Lighting) Regulations 1941

ARE YOUR LIGHTS RIGHT?

Consult an **Eleco** Industrial Lighting Expert

ENGINEERING & LIGHTING EQUIPMENT CO. LTD.

DEPT. W.S., SPHERE WORKS, ST. ALBANS, HERTS. 'PHONE: ST. ALBANS 2258/9.

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Always at your service in Steel Fabrics and Designs for Reinforced Concrete Structures.

Notwithstanding prevailing difficulties we are still able to offer our customers a generous and sincere service and to comply with almost any specification, no matter how intricate.

Our technical staff is anxious to serve you and to give you the full benefit of their experience—why not write for their assistance?

TWISTEEL REINFORCEMENT LTD., ALMA STREET, SMETHWICK, STAFFS

And at LONDON, BELFAST, WARRINGTON AND GLASGOW

Telephone Nos. :

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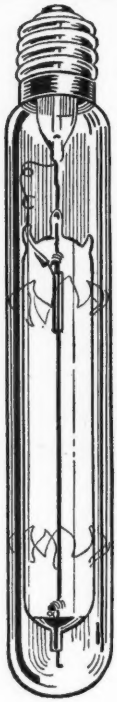
Glasgow: City 7661 (4 lines)

OSIRA LAMPS

REGD. TRADE MARK

FAMOUS THROUGHOUT INDUSTRY



A

G.E.C.

PRODUCT

For A.C. Circuits only

Where big production is going on . . . .

These are days of bold conception in works or factory design and layout — huge bays for starting and finishing a complete process replacing the separated departmental system of yesterday. Larger areas have to be lighted so that every detail of the work is plainly visible.

It is in just these situations that OSIRA High Pressure Mercury Vapour Electric Discharge Lamps have proved most valuable. Apart from many other advantages they give nearly three times as much light as tungsten filament lamps using the same amount of current.

Advt. of The General Electric Co. Ltd., Magnet House, Kingsway, London, W.C.2

KEYS TO L.D.C. "LASTING RELIABILITY"

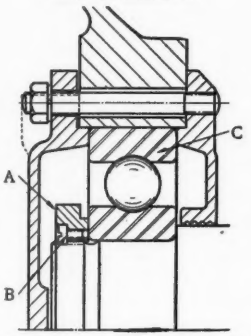
BALL & ROLLER BEARINGS

Ball and Roller Bearings are fitted to all small and medium size L.D.C. Motors. On large machines, from about 200 H.P. upwards, the type of bearing is usually governed by the duty of the motor. The Ball Bearings are made from carbon chrome steel. hardened throughout, the hardness figure being between Rockwell C 62 and 65 and a crushing load of at least 8 tons is required to fracture a ½in. ball.

All "Lancashire-Crypto" bearings are enclosed by easily removable covers which exclude dirt, grit and moisture.

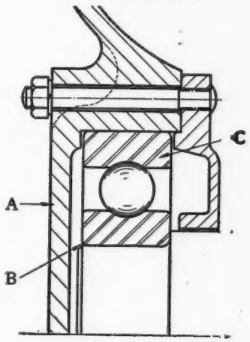
The bearings are held on the shaft by lock nuts except in the case of the roller bearing at the driving end on small machines.

L.D.C. LTD. STANDARD ARRANGEMENT.



A. Bearing secured in position by locking nut.
B. Locking nut locked by cheese-headed screw.
C. Outer race of bearing gripped between two faces.

NOT RECOMMENDED ARRANGEMENT.



A. Bearing cannot be inspected without complete dismantling.
B. Bearing not locked endwise.
C. Bearing not gripped.

These lock nuts are in turn locked by a cheese-headed screw embedded in both nut and shaft. This is a typical instance of the careful attention given to the various component parts of L.D.C. motors and it is justified by the trouble-free service given by the thousands of L.D.C. motors now in operation in all parts of the world.

LANCASHIRE DYNAMO & CRYPTO LTD
TRAFFORD PARK, MANCHESTER, 17 WILLESDEN, LONDON, N.W.10
Associated Companies
FOSTER TRANSFORMERS & SWITCHGEAR LTD., WIMBLEDON, S.W.19 CRYPTON EQUIPMENT LTD., WILLESDEN, N.W.10

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SPECIALISTS

in the design and manufacture of
COIL WINDING MACHINES
TAPING MACHINES
WIRE COVERING MACHINES
ARMATURE AND STATOR COIL WINDERS

AND SIMILAR SPECIALISED MACHINERY FOR THE ELECTRICAL AND ALLIED INDUSTRIES

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NEVILLE'S (LIVERPOOL) LIMITED
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A DIVISION OF THE SIMMONDS GROUP

Solving one Problem of **MAINTENANCE**

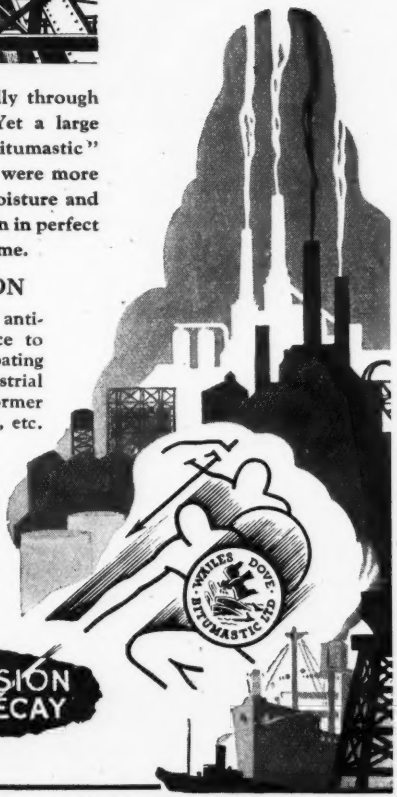
Millions of pounds sterling are lost annually through the effects of corrosion, rot and decay. Yet a large proportion of this loss could be avoided if "Bitumastic" and other Wailes Dove bituminous coatings were more widely adopted. They resist atmosphere, moisture and industrial fumes, and surfaces so treated remain in perfect condition for exceptionally long periods of time.

"BITUMASTIC" BLACK SOLUTION

A general-purpose paint possessing exceptional anti-corrosion properties. It keys into the surface to which it is applied, forming an elastic coating impervious alike to water, atmosphere, industrial fumes and alkalis, etc. Widely used for transformer parks, transmission towers, accumulator rooms, etc.

Ask for ANTI-CORROSION GUIDE.

It gives detailed guidance as to the exact Wailes Dove preparation to use for any particular surface. Surfaces are listed under headings with thumb index for quick reference. Please mention Dept. L.3.



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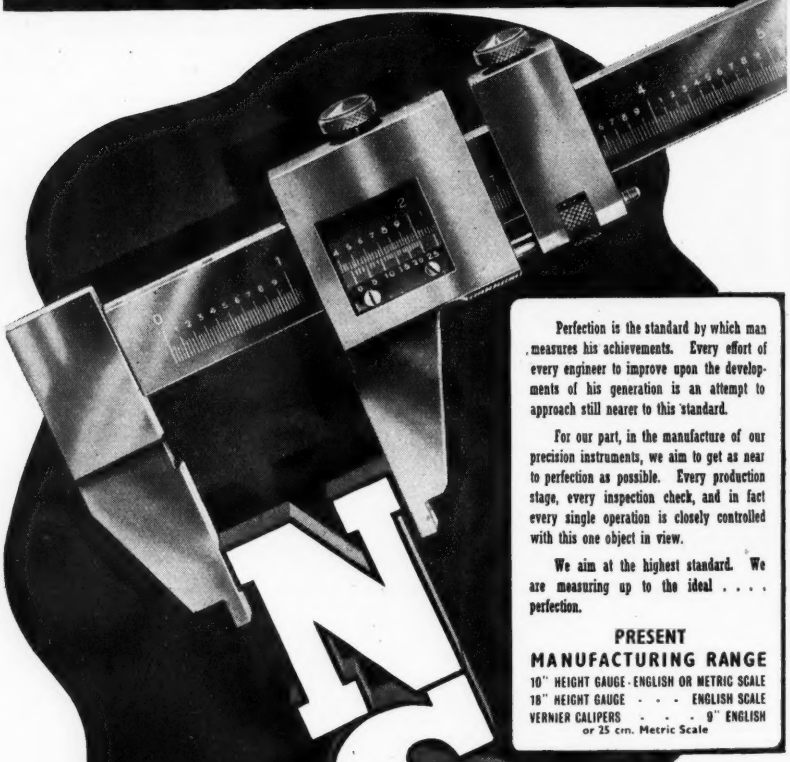

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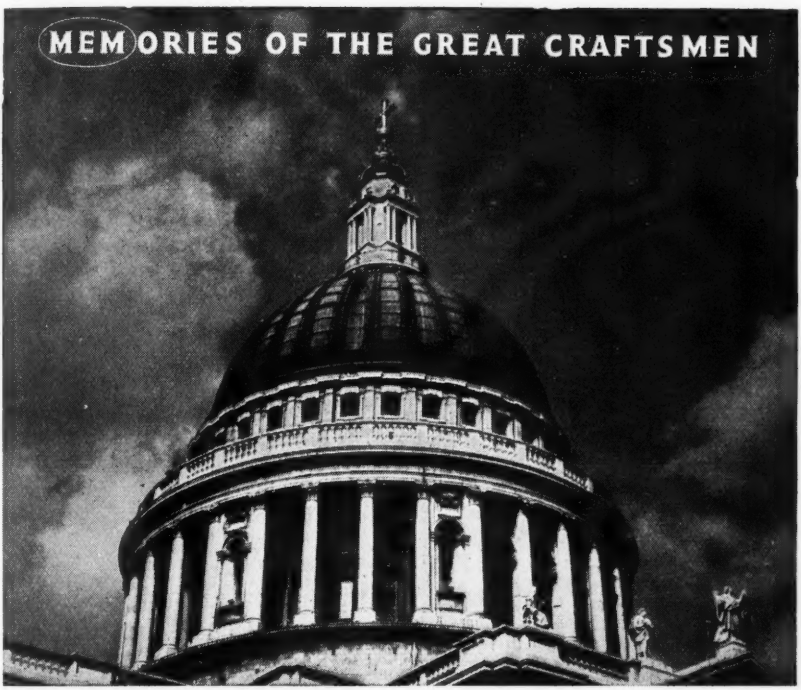

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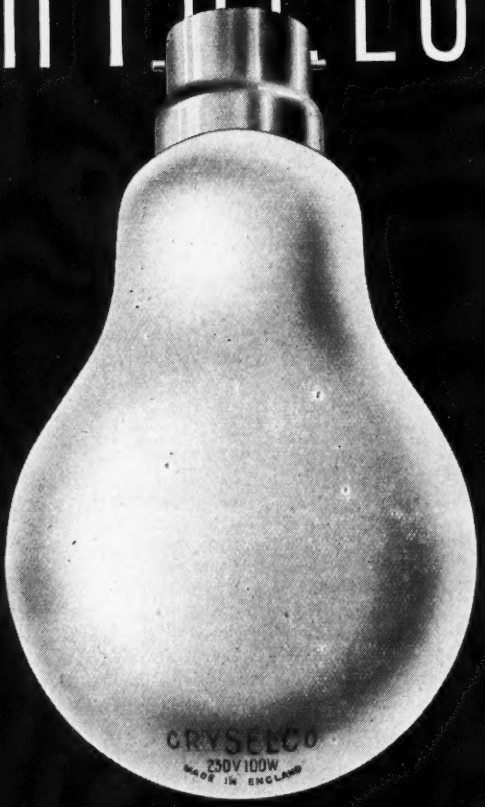

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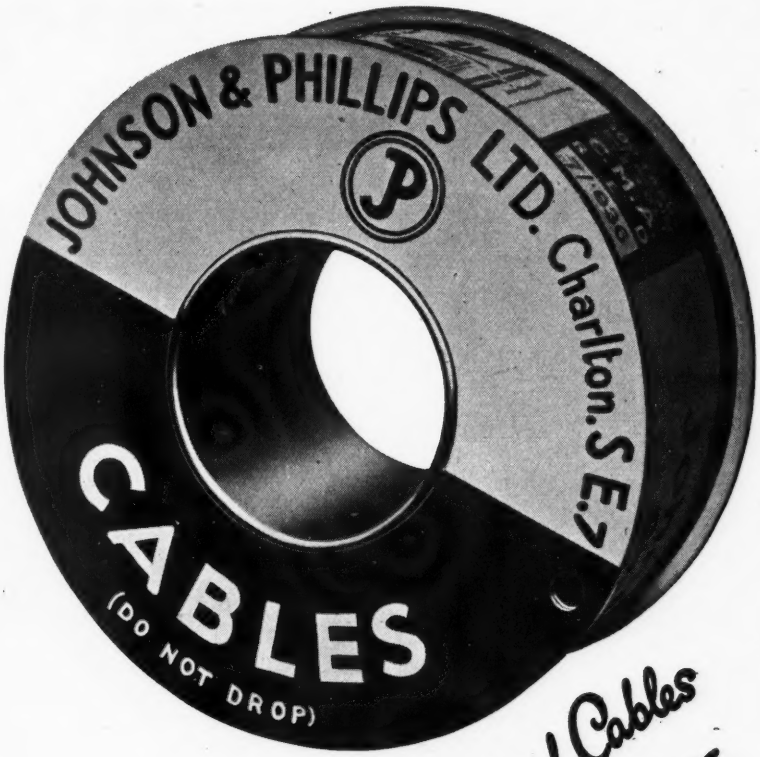

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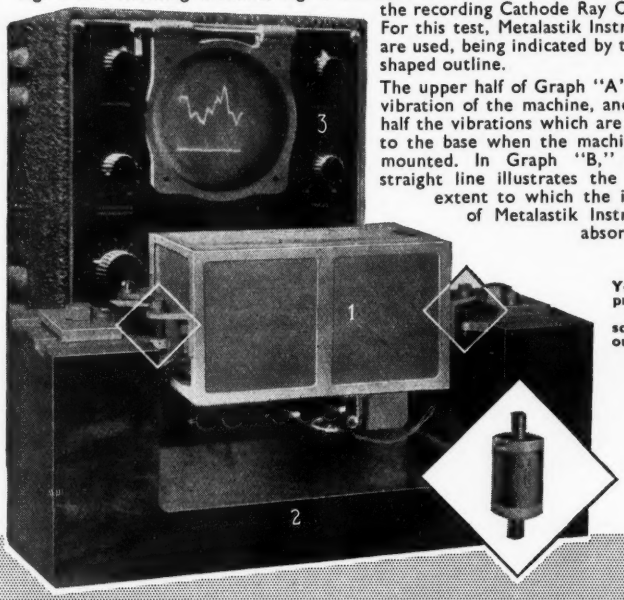

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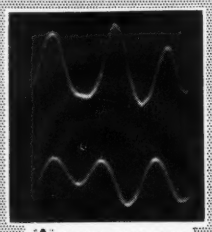
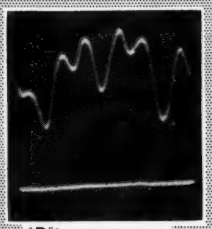


"A" WITHOUT METALASTIK.

← Vibrations of machine. →

← Vibrations of base—almost entirely eliminated in the Metalastik insulated base. →



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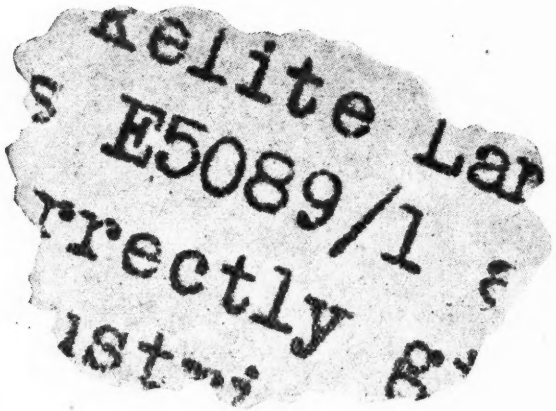

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ELECTRICAL REVIEW

Volume CXXXI — No. 3379

Friday, August 28, 1942

Contents

	Page		Page
Editorial—Rural Electricity Supply	257	Correspondence	272
School Heating	259	Personal and Social	273
Soldering Electrical Joints. By "Microfarad"	263	Commerce and Industry	274
I.E.E. Awards	266	Recent Introductions	277
Magnetic Crack Detectors	267	Reconditioning Appliances	279
American Electrical Appliance Prices	268	Electricity Supply	280
Rural Amenities	269	Financial Section	281
The "Battle for Fuel"	271	New Patents	286
		Contract Information	287
		Persian Electrical Imports	288
Classified Advertisements	61	Index to Advertisers	72

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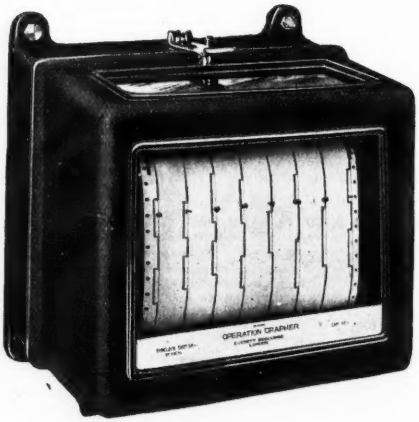

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ELECTRICAL REVIEW

THE OLDEST ELECTRICAL PAPER — ESTABLISHED 1872

Vol. CXXXI. No. 3379. AUGUST 28, 1942 6d. WEEKLY

Rural Electricity Supply

The Scott Committee's Report

WHILE it was inevitable that the question of the reorganisation of electricity distribution would be raised in connection with schemes for post-war planning, it comes as something of a shock to find it so definitely dealt with by Lord Justice Scott's Committee on Land Utilisation in Rural Areas.

It is true that the Committee appears to have been very strongly impressed with the importance of the rôle which electricity can play in keeping the rural population contented and thus preventing the decline of British agriculture which the war has shown to have weakened our defences. But it would have been thought that a general recommendation that the reorganisation of electricity supply should be examined would have been the limit of the Committee's activities in this direction —a view which is endorsed by Professor Dennison, one of its members.

McGowan Committee's Views

As it is, the section of the report covering these matters cuts across the recommendations of the McGowan Committee, which was set up especially to deal with them. Important and desirable though it may be to bring the benefits of cheap electricity to the country dweller, the Committee goes rather far in suggesting that the rural tail should wag the urban dog.

There seems to be a difference of opinion between Professor Dennison and his colleagues as to the meaning of the electrical evidence. As we have not been privileged to see this evidence we cannot say what the correct interpretation may be, but it is not easy to swallow the suggestion that systematic rural development would actually decrease the urban consumer's charges.

The McGowan Committee recognised only two classes of rural areas in which electricity was not yet available. The first were those in which it might be anticipated that a supply could be provided under a comprehensive scheme and, while perhaps not immediately remunerative, would show an economic return in a few years, and the other comprised remote and sparsely populated areas in which it was unlikely that a supply could be given economically except, perhaps, with some form of subsidy.

Service Costs

It could only go as far as to say that the grouping of rural or urban areas " should enable development to be achieved without imposing an undue burden on the urban area." The Scott Committee recommends considerable liberality in the provision of free service connections; the McGowan Committee thought that for individual and isolated consumers the supply authorities should be reimbursed the whole or part of the capital cost or should require a guarantee of revenue, although it did suggest that the local authorities might be associated with any guarantee and charge to the rates any sums which they might be called upon to pay.

We wish to make it clear that this was one of the principles upon which the Government based the comprehensive

grouping of the country's electricity undertakings which was set out in the White Paper on electricity distribution published in 1937. We are by no means pessimistic about rural development. Our pages have borne witness to what can be done in this field by forward-looking supply authorities, and done on an economic basis. Nor do we question the need for the reorganisation of distribution. But we think that a realistic attitude is essential and that the subject has already been thoroughly surveyed by the McGowan Committee which was appointed for the purpose.

Plant Construction Halted

LAST week an outline was presented of the targets at which producers of electricity in the United States were being directed to aim. It has now been announced that the War Production Board has readjusted the entire programme of wartime expansion of power production capacity. It has halted, or suspended, work on 85 power projects, both public and private, stating that this move will " substantially enhance the probability of widespread curtailment " of civilian uses of electricity. This revision of policy has followed the earlier decision to suspend work on most of the plants that were being constructed for war production purposes which could not be expected to be completed by the middle of 1943.

" Uprating " Equipment

IN the endeavour to make electrical equipment thoroughly reliable and long-lived manufacturers in this country and the United States have worked to high standards of safety. This has necessarily involved the use of materials on liberal lines which was all very well when materials were abundant and easily obtained. Present-day circumstances have forced upon us a revision of many practices and the Emergency Specifications of the British Standards Institution exemplify the results. In the United States the War Production Board has asked the National Electrical Manufacturers' Association to look into the matter of " uprating " electrical equipment as a means of conserving material. In the power branch of the industry it is considered possible to increase the rating of most items of equipment by 25 per cent. The investigation will extend beyond the scope indicated into the field of design and layouts.

Down to Brass Tacks

LAST Sunday the Ministry of Fuel and Power opened the " Battle for Fuel " by giving the public a definite objective at which to aim. Advertisements appearing in the national newspapers were introduced by Commander King-Hall in an effective broadcast talk The " target " placed before each householder is the amount of fuel to which he and his family would be entitled to under the rationing scheme annexed to the White Paper on Coal, and instructions are given for the calculation of this quantity in coal and its equivalents. It is to be hoped that public interest will be sustained and that the results will justify the effort. But it must never be forgotten that the miners form the front line in this battle; industry and the public will expect them to do their duty too.

Dual Offenders

SINCE the beginning of the war there have been innumerable cases of people being fined for inadvertently leaving lamps alight in premises which have not been " blacked out." This has now become a double offence. Two or three police court cases have shown that this inadvertence brings the careless into the scope of the Waste of Fuel Order and additional penalties have been the result. The Order goes even farther than this apparently; a boy who recently rang up a telephone operator and " crooned " to her has been accused of wasting electricity by making an unnecessary call. This seems to open up an endless vista.

Querulous Quibbling

" JANUS " of the *Gas Times* will, from time to time, insist that electricity suppliers are giving their service away. He now protests because Nottingham and Luton are reducing their charges. In the first case it was explained that it was possible to do this because the reserves were more than sufficient. This is termed by " Janus " squandering largesse from the purse of others. Who the " others " are is not stated, but so far as we are aware all the money was contributed by the consumers who are now to be relieved. Luton appears to have been overcautious in its view of possible war effects, so we are at a loss to understand why " Janus " should protest against a righting of the balance.

School Heating

Electricity Solves a Difficult Problem

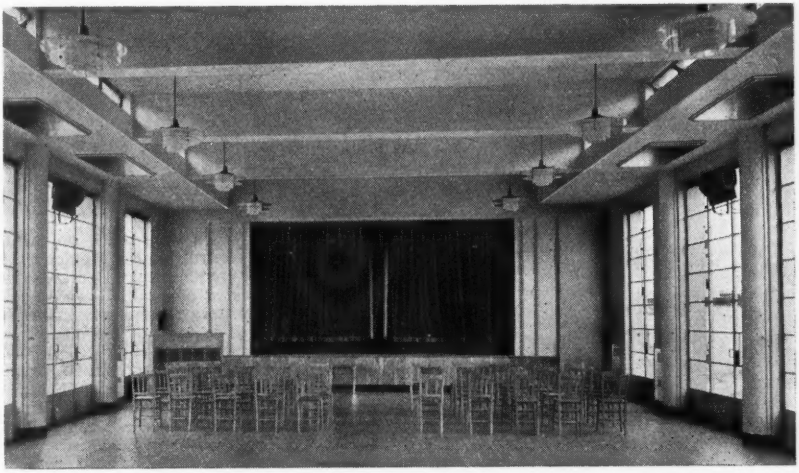
THE comprehensive electrical installation, in particular the heating portion, at the Ilford Borough Council's new Parkhill School, which was officially opened a few weeks ago, should prove a profitable subject for study by those who will be responsible for post-war planning of buildings of this kind. This school was actually completed just at the outbreak of the war, when part of it was taken over for A.F.S. duties, and it has only recently been made available for its original purpose. It may therefore be regarded as one of the most up-to-date examples in existence of electrical practice as applied to schools.

The open construction of Parkhill School, Ilford, presented a difficult heating task, which has been successfully accomplished with tubes, panels and convectors

Designed to accommodate 740 children, the school is arranged as two separate sections, junior mixed (400 places) and infants' departments (340 places), connected by a covered way which also serves as an air-raid shelter. Each section has the same general layout in the form of a cross, the longest arm of which comprises the class-rooms and cloakroom, the other arms accommodating assembly halls, babies' room, staff rooms, lavatories, etc. With the exception of a staff room on the first floor, the whole building is arranged on ground level, so eliminating all stairways.

Special consideration has been given to hygiene and health conditions generally. To ensure that the maximum amount of sunlight and fresh air may enter the building, it is provided with an exceptionally large window area. One complete side of each classroom is constructed in the form of a large window, opening on the sliding-folding principle, thus enabling the building to be used as an open-air school in fine weather.

This form of construction presents a considerable problem with regard to the heating on account of the exceptionally high heat losses resulting from the use of so much glass. It is here in particular that electricity has been able to play such an important part by reason of its great adaptability in connection with the production of heating units which can be fixed in any position, and its suitability for automatic temperature control, so essential in a building of this type in order to avoid waste of heat energy.



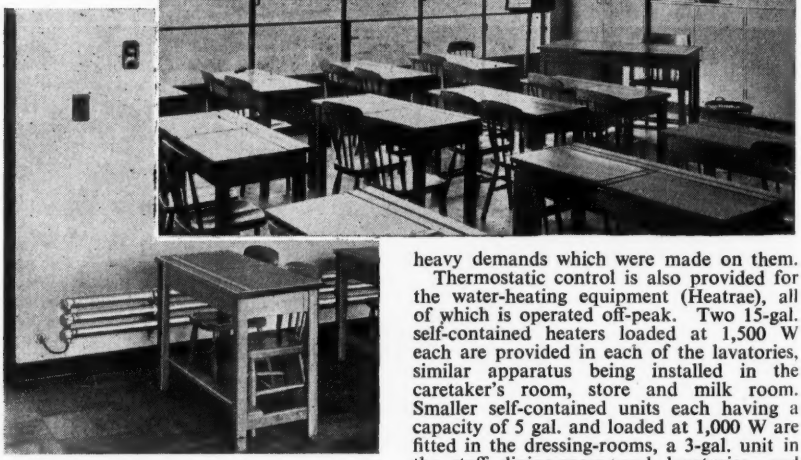
The junior school assembly hall. Note ceiling panel heaters and convectors. The latter are 2-kW units fitted in the walls of the hall

Each classroom, measuring 23 ft. 9 in. by

22 ft., and accommodating 40–48 children, has a connected heating load of about 10 kW. In addition to low-temperature tubular heaters (60 W per ft.), panel heaters (loaded at 500 W each) have been fitted above the transoms of the sliding windows and also under the blackboards in the form of skirtings which are indistinguishable from the normal skirtings used in the building. In the babies' room the tubular heaters, which run under the blackboard and under the lockers beneath the windows, are, for the sake of additional safety, protected by a wire covering.

In each of the 55 ft. by 33 ft. assembly halls there is over 30 kW of heating equipment, including 2-kW inset convectors in the walls and low-temperature ceiling panels (also 2 kW). The stage itself, as well as the dressing-rooms, are heated. The staff rooms and the air-raid shelters have portable convectors as well as tubular heaters. In the cloakrooms tubular heaters under the coat racks assist the free circulation of air round the clothing and ensure drying in wet weather. In the lavatories and the tank room the water pipes are protected against frost by tubular heaters which function automatically when the temperature falls below 45 deg. F.

The whole of the heating is, in fact, thermostatically controlled and, except for certain points where special "emergency" plug sockets or convectors are provided, is entirely off-peak. All the heating apparatus installed was supplied by Unity Heaters, Ltd. The head teachers have expressed entire satisfaction with the performance of the whole of the electric heating equipment, which was put to a very severe test during the exceptionally cold spell last winter, when many systems depending on boilers consuming solid fuel proved inadequate to meet the heavy demands which were made on them.



In addition to panel heaters over the windows the classrooms also have skirting units under the blackboard and tubular heaters along the base of the walls

Thermostatic control is also provided for the water-heating equipment (Heatrae), all of which is operated off-peak. Two 15-gal. self-contained heaters loaded at 1,500 W each are provided in each of the lavatories, similar apparatus being installed in the caretaker's room, store and milk room. Smaller self-contained units each having a capacity of 5 gal. and loaded at 1,000 W are fitted in the dressing-rooms, a 3-gal. unit in the staff dining-room and lavatories, and medical inspection room. The head teacher's room has a 1½-gal. 750-W unit. Altogether the connected water heating load is 24·25 kW. Meals are not provided at the school except in emergencies, so that there are no regular kitchens. There is, however, an electric cooker in the staff room.

Special attention has been paid to the children's eyesight by furnishing a well-

planned scheme of illumination giving an average lighting intensity of 10–12 ft.-candles over the whole classroom area. For this purpose four totally-enclosed ceiling units (Merchant Venturers) accommodating 300-W lamps are used. Attractive pendant fittings (Falk Stadelmann) illuminate the assembly halls.

In the cloakrooms low-temperature tubular heaters assist the free circulation of air around the clothing and ensure drying in wet weather

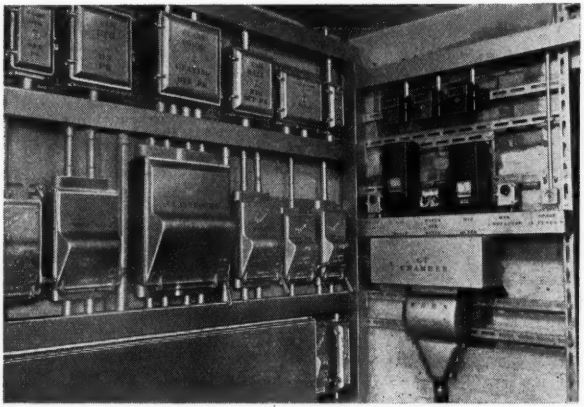
In the junior school the assembly hall is provided with a full-sized stage. This is equipped with Holophane lighting apparatus comprising two 1,000-W "Franca" spotlights, two 500-W wing floods and two four-colour lighting battens (forty-four 150-W lamps) complete with colour mixing apparatus. Flexible tubing containing all the wiring enables the stage lighting switchboard to be manœuvred to the most convenient position in the wings. On the stage there are three 15-A plug sockets for any additional apparatus required in connection with stage shows, while in the hall itself is a further plug point of ample capacity (25 A) for any other equipment that may be needed. A projector room is wired for talking film apparatus and a radio-gramophone serves not only the hall but also the classrooms where loudspeaker sockets are looped in.

There are two intake rooms, one in each department, and also a sub-intake in the infants' department. Where so many different on-peak and off-peak loads are involved, this arrangement has obviated long runs of cable. The main intake adjacent to the infants' department has a 500-kVA, 6,000/230-V automatic tap-changing transformer which serves the whole of the school. Lighting, heating and water-heating supplies are metered separately, and the busbar chambers have the phase bars divided into three sections, for lighting, off-peak heating and on-peak heating. Electrically wound (10A) Venner time switches operate 250-A per phase contactors (Bray) for off-peak heating and 75-A contactors for water heating. Power Centre trunking is employed.

Self-contained electric water heaters provide the hot water in the lavatories, where tubular heaters prevent the water in the cisterns from freezing

Separate Sanders "Superior" metal-clad switch-fuses mounted on slotted frames make it possible to isolate each section of the

buildings, halls, classrooms, etc., as well as special services such as the frost protection heating. H.r.c. fuses are used for the service and main switch protection, and all the fuses carriers on the main boards are arranged to take h.r.c. fuses if they are ever thought desirable. All the sub-main boards are rewirable.



The intake room for the junior school

The design of the buildings, with their long corridors (the junior department is approximately 300 ft. long), has made economical wiring somewhat difficult, and the Electricity Department is to be congratulated on the way the layout has been arranged. Matters were simplified considerably by having the necessary chasing, 5,000 ft. of it, marked out in the early stages of the building work. From the intake room chases 12 in. across and 4 in. deep have been laid down the centre of the corridors to accommodate the whole of the cabling. At intervals there are inspection boxes, 1 ft. square, from which are fed the lighting and heating sub-fuse boards inset in the walls. Each of these fuse boards generally serves four classrooms.

From the lighting fuse boards the wiring is carried above the ceiling, the cables for the heating circuits going to 6-in. square boxes in the centres of the classroom floors. The wiring up of heaters and thermostats from these boxes is a simple matter requiring the minimum of materials.

The use of a standard system of wiring throughout the school also facilitates maintenance and extensions.

The total connected load of the whole school is over 400 kW and particular attention has been paid to balancing the load over the three phases, the final figures achieved being 608·2 A, 595·5 A, and 593·8 A, respectively.

The whole of the electrical installation of this school was designed and the work supervised by the Ilford Council's Electricity Department under the management of Mr. G. F. Gregory, borough electrical engineer and manager.

Elgin Valuation Ruling

IN November last year the Elgin Electricity Supply Co., Ltd., applied to the Sheriff of Lothians and Peebles to have the company's undertaking valued by the assessor of public undertakings instead of by the Moray county lands valuation assessor. The application was debated in Edinburgh early this year by the then Sheriff-Principal, who sustained the contentions of the objectors (Elgin Town Council, as rating authority, and the Joint County Council of Moray and Nairn, as valuation authority) that the application was irrelevant and he had no jurisdiction (*Electrical Review*, February 27th.)

Recently the company again made intimation to the Sheriff of Lothians and Peebles of its desire to have all lands and heritages in Scotland forming part of the undertaking valued by the assessor of public undertakings and Sheriff Fenton, having heard proof, has issued an interlocutor (intermediate judgment) receiving the intimation sought. His Lordship is of opinion that the office of the company at 10, Melville Street, Edinburgh, satisfies the statutory description of "head office and place of business of the company" and the direction, management, and superintendence of the affairs of the company are carried on in the office at Edinburgh, not in the office at Elgin, where the staff, technical and clerical, act in accordance with particular or general instructions issued from what may properly be regarded as the company's headquarters in Edinburgh. His Lordship says it is proved that the company supplies electricity to consumers within the burgh of Elgin and also to premises situated in the county of Moray about three quarters of a mile beyond the burgh boundary. The wires transmitting the electricity are necessarily continuous. He is therefore of opinion that the company has continuous lands and heritages both in the burgh and in the county outside the burgh and, there being different rating authorities for the burgh and the county, that the company is entitled to invoke the provisions of Section 23 of the Act of 1854.

Soldering Electrical Joints

Technique and Selection of Suitable Materials

By "Microfarad"

THE process of soldering may be defined as the uniting of metals by means of an alloy which melts at a lower temperature than their fusing points, as distinct from welding in a state of fusion. The solder alloys with the surface layers of the parts being joined, and the process is not simply one of adhesion.

There are two broad classes of soldering, *viz.*, soft soldering in which alloys of tin and lead are mainly used, and hard soldering in which alloys of copper and zinc (brazing) or alloys of silver, copper and zinc (silver soldering) are employed. Soft soldering is used very extensively in electrical work and silver soldering to some considerable extent; brazing is rarely used.

Soft solders melt at comparatively low temperatures (183 deg. to 310 deg. C.) and are worked at a black heat. They are thus convenient to use in production work by semi-skilled labour. Silver solders have higher melting points (630 deg. to 775 deg. C). They are worked at a red heat and thus call for more skill in manipulation and generally are not so convenient. Silver solders, however, have much greater strength (22 to 46 tons per sq. in.) than soft solders (1·6 to 4·9 tons per sq. in.). These silver solders are silver brazing solders, and are not to be confused with some soft solders containing a very small percentage of silver.

The characteristics of various solder alloys are described and reference is made to the scope for economies in tin owing to wartime exigences

Applications of Hard and Soft Solders

Both soft and hard solders have other relative advantages and drawbacks, but generally in electrical work soft soldering is used wherever possible and silver soldering only where the characteristics of soft solder are unsuitable.

The electrical conductivity of soft and hard solders is considerably less than that of copper, varying with the composition between approximately 9 and 13 per cent. for soft solders and 20 and 40 per cent. for silver solders.

Typical examples of the use of soft solders are in connections to commutators, joins in leads and terminals, armature bands, sweating of very small squirrel-cage rotors and joints in shading bands.

Silver solders are used in joints in wires and cables during manufacture, joints in busbar conductors and the brazing of squirrel-cage rotors, other than very small sizes, which are soft soldered.

A flux is generally necessary to prevent oxidation of the joint during soldering or brazing. Some of the more generally used fluxes cannot be used for electrical work, while conversely flux is not necessary when using certain brazing materials for joints in copper conductors.

Points to be Considered

Some or all of the following points have to be considered in the selection of soldering processes for joints in current-carrying conductors:—

(1) In order to secure adequate strength and maximum conductivity, thorough cleaning of the joint and adequate heating, but not overheating, are necessary.

(2) As little solder as possible should be used owing to its higher electrical resistance and because the strength of the joint diminishes rapidly with increasing space between the parts being joined. This calls for close fitting joints prior to soldering and a solder which will flow readily.

(3) The solder must not weaken at normal working temperature, which for electrical apparatus may often be 40 to 50 deg. C. above the room temperature. The tensile strength of solder drops rapidly with increase in temperatures. Since ordinary tin-lead alloys commence to melt at 183 deg. C., special care is necessary in the choice of solders for apparatus working at elevated temperatures.

(4) Closely allied with the previous consideration is the fact that many electrical joints, such as those of armatures, commutators and squirrel-cage rotors operate under the stress of considerable centrifugal force. Stresses may also occur due to change of temperature. This calls for a solder which is both strong and ductile.

(5) Fluxes of a corrosive nature—comprising the bulk of those used in general tinsmith and engineering work—cannot be used for electrical joints owing not only to the corrosive effects of any residue left on or trapped in the joint, but also to electrolytic action of the currents flowing through the joint. This limits the choice of flux to those of an inactive nature, which call for more care in use. Flux residue must be readily removable.

(6) Solders used for joining copper in the manufacture of cables must be both strong and ductile to withstand the subsequent drawing operations, and it is for this reason that silver solders are generally employed.

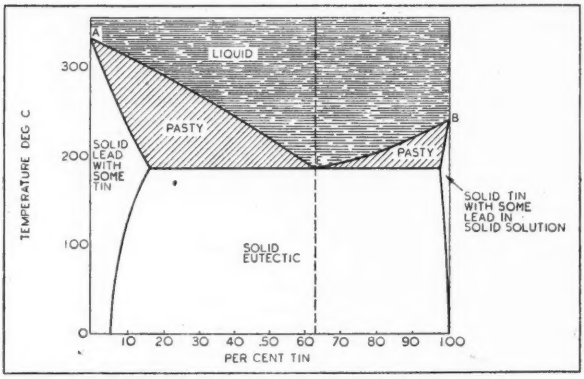


Fig. 1—Melting points of tin-lead solders of varying composition

With a few exceptions, soft solders are composed of alloys of tin and lead in varying proportions according to the melting point and other characteristics required. A small percentage of antimony, while having advantages for general work, makes the joint more brittle, decreases the electrical conductivity and makes the solder a little less free in working. It is therefore kept to a minimum in solders for electrical purposes.

In common with other alloys, tin-lead solders have a lower melting point than either of the metals in their composition. Pure tin melts at 232 deg. C., pure lead at 327 deg. C., but a solder containing 63 per cent. tin, 37 per cent. lead melts at 183 deg. C. only. This particular composition represents the eutectic or lowest melting point of the series. An increase in the amount of tin or lead will increase the melting point.

In the diagram showing the melting points of various tin-lead solders (fig. 1) E represents the lowest melting point solder and transition from solid to liquid is immediate. Above and below this value the alloy passes through a pasty stage in melting and solidifying. This diagram explains why two figures are usually given for the melting points of solders. The lower is the one where the solder begins to melt, and the higher that at which it is completely liquid.

A useful guide to the composition of soft solders is contained in B.S.S. No. 219–1932, and 1940 addendum in which twelve alloys are listed with an indication of their purposes and the maximum and minimum permissible proportions of tin, lead, antimony and impurities. An extract from this Specification is given in Table I. A solder containing an exceptionally high percentage of tin (Grade E) is very largely used for joints in conductors and to commutators, etc., where the operating temperature is relatively high. It possesses a high degree of fluidity and a high electrical conductivity. In Grades H and L lead predominates thus giving the slow solidification which is required in the making of a wiped joint. Grade G, for dipping work, contains a lower proportion of tin and is therefore cheaper than Grade F. It has a higher melting point but is weaker than the

TABLE I.—BRITISH STANDARD SOFT SOLDERS

GRADE	COMPOSITION			USE
	Tin (Nominal)	Antimony (Maximum)	Lead	
A	65	1.0		Work requiring low melting point steel tube joints.
B	50	3.0		Tinsmiths' and coppersmiths' fine work. Hand soldering.
C	40	2.4		General work. Hand soldering.
D	30	1.7		Plumbers' wiped joints.
E	95	.5	The remainder	**Special electrical purposes.**
F	50	.5		Conductor jointsand machine soldering. **General electrical purposes.** Zinc and galvanised ironwork.
G	42	.4		Dipping baths. Zinc and galvanised iron work. **Tinned electrical joints.**
H	35	.3		**Lead cable wiped joints.**
J	30	.3		Dipping baths.
K	60	.5		Special machine solder.
L	32	1.9		**Lead cable wiped joints.**
M	45	2.7		Tinsmith general work. Hand soldering.

latter. The properties of solders used for current-carrying joints are set out in Table II.

The tensile strength of solders falls rapidly with increase of temperature and all tin-lead alloys commence to melt at 183 deg. C., irrespective of the proportion of the constituents and of the temperature at which they become completely liquid. The operating temperature of a machine under normal working conditions may be as high as 70 deg. C., thus the margin of safety is limited.

TABLE II.—PROPERTIES OF SOLDERS FOR CURRENT-CARRYING JOINTS

FOR	GRADE	NOMINAL COMPOSITION			Melting Range °C.	Tensile Strength Tons sq. inch	Elongation on 4 in. %	Relative Conductivity (Copper =100)	NOTES
		Tin	Lead	Antimony					
General electrical purposes	B.S.I. Grade F	50	50	0–.5	183–214	3.0	40	10.7	Tin-lead solder
Special electrical purposes (high temperatures, etc.)	B.S.I. Grade E	95	5	0–.5	183–222	2.0	47	13.6	High tin-lead
Ditto	—	94.4	—	5.6	233–235	2.81	42	10.7	Tin-antimony. No lead. (High melting point)
Tinned joints Dipped work ..	B.S.I. Grade G	42	58	0–.4	183–234	2.8	38	10.2	Tin-lead

[Test figures given by the British Non-Ferrous Research Association in "Tin Solders."]

The only way to raise the melting point is to substitute for either the tin or the lead some other metal which, while still amenable to soft soldering methods, will raise the melting point. Development has taken place on several lines, *e.g.*, the use of alloys of tin-antimony, silver-tin, and silver-lead. The tin-antimony solder is recommended for electrical work at elevated temperatures. It can be made to replace tin-lead solders without any change being made in the soldering technique. It possesses relatively high electrical conductivity.

Oxidation of metal surfaces, sufficient to prevent effective soldering, takes place under ordinary atmospheric conditions and becomes worse when the surfaces are heated. A flux is required which will clear the surfaces to be joined of any existing oxide and prevent the formation of any more during soldering. The most successful fluxes are of an acid, and therefore corrosive, nature and cannot be used for electrical work. The only "safe" flux is resin which, for convenience, is usually dissolved in alcohol. As resin is not an active flux it has little cleaning property, and so all joints must be very well cleaned mechanically before it is applied.

Developments have been in the direction of including a small proportion of other materials which increase the activity of the flux at temperatures near the melting point of the solder, but are entirely inhibited at ordinary working temperatures.

Solder in tubular form, with a core of flux, is very much used in electrical work owing to its convenience, the proportions of each being set out in B.S.S. No. 441–1932. One such solder (Multicore Solders, Ltd.), has three separate cores of flux by which, it is claimed, any risk of bad joints caused by discontinuity of the core is obviated. The flux is treated to increase its activity at soldering temperature.

For jointing copper conductors of a heavy section, electric bits rated for general work may not maintain sufficient temperature, whereas if the heat is increased they are liable to burn when not in active use. For joins in wires, contacts, small commutators, etc., the electric bit is much used. It is frequently more convenient on light jobs to fix the iron to the bench and bring the work to it.

In the diagram of the Chapman commutator soldering machine (fig. 2) pan A contains solder kept molten by electric heaters B, the

TABLE III.—CHARACTERISTICS OF LOW-TIN SOLDERS

COMPOSITION %					Melting Range		Tensile Strength lbs./sq.in.	Strength of Lapped Joint lbs. /sq. in.	Spread of ½ gr. of Solder sq. inches	DESCRIPTION
Lead	Tin	Silver	Bismuth	Antimony	Solidos °C	Liquidus °C				
60	40	—	—	—	238	183	5660	6270	1.30	40.60 tin lead solder
77.5	15	1.5	5	1	258	—	8000	5090	.29	Special low tin solders
74.85	20	1.5	3	.5	258	—	8120	5380	.39	Special low tin solders

[American Smelting & Refining Co. Published in "Metals and Alloys," March, 1942.]

normal height of the solder being as indicated by the unbroken line, and just below the top of the tube C on which the armature D rests.

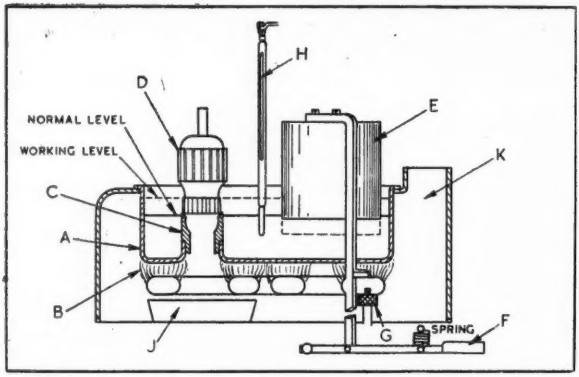


Fig. 2—Principle of Chapman commutator soldering machine (*Selson Machine Tool Co., Ltd.*)

To the right of the armature is a float E which is attached to foot-pedal F. When this is depressed the float is drawn into the solder, the level of which rises.

Stop G is arranged so that the float enters just the required distance to bring the solder to the level of the commutator lugs as indicated by the broken lines. A thermometer H indicates the temperature of the solder.

Any solder leaking through is caught by drip pan J, while fumes are conducted away by the flue K. This arrangement has the further advantage that the dross on the solder is washed away from the commutator.

Electrode soldering is used to an increasing extent in the manufacture of electrical apparatus. The parts to be soldered are clamped between carbon electrodes; passage of a heavy low-voltage current heats the blocks and joint to a soldering temperature. The apparatus is made both for bench use and in the form of tongs.

A large proportion of all tin produced is used as solder, of which the electrical industry is one of the largest consumers. In view of war developments all soldering operations should be reviewed in order to minimise the amount of tin consumed.

One form of economy is to use solders having a lower tin content. Since whatever the ultimate or fully molten temperature of tin-lead solder, melting commences at 183 deg. the tin content can probably be lowered considerably with little detriment to the work, *e.g.*, a 95-5 alloy may be replaced by 60–40, saving 35 per cent. of the tin; similarly a 60–40 or 50–50 may be replaced by a 40–60 solder.

Lead-silver solders have not hitherto been used in electrical work to any great extent owing to their poor spreading and other properties. Investigations carried out in America show that the addition of small percentages of tin and antimony to these greatly improve their characteristics. (See Table III.)

I.E.E. Awards

THE award of additional premiums and scholarships is announced by the Institution of Electrical Engineers. Premiums of £10 each for papers presented to the Students' Section go to Messrs. B. Calvert (" A Gas-filled Cable System "), W. P. Jones (" Some Aspects of Electrical Resistance Welders"), R. A. Joseph (" Fitting the Engineer to his Job ") and D. Little (" An Introduction to Frequency Modulation "), while premiums of £5 have been awarded to Messrs. S. H. Bowers (" Discharge Tubes in Traffic Control "), J. K. Clark (" A Review of Electric Traction Systems in Europe"), A. E. Cunningham (" Choice of 3-phase Industrial Motors "), E. Jeffrey (" The Electrical Units "), J. Jones (" Some Aspects of Production Engineering "), E. D. Knight (" Radio Aids to Navigation "), F. A. Milne (" An Outline of Automatic Telephony "), and F. W. Page (" The Safe Current Loading of Cables and Overhead-line Conductors ").

The Duddell Scholarship has been awarded to Mr. R. G. Martin, the Silvanus Thompson Scholarship to Mr. H. J. Hair, the William Beedie Esson Scholarship to Mr. W. Chellingsworth, and the Thorrowgood Scholarships to Messrs. E. E. Mathews and A. D. Turner. The awards for the Salomons and David Hughes Scholarships will be announced later. It has again been decided not to award the Ferranti or Swan Memorial Scholarships or to make grants from the War Thanksgiving Education and Research Fund.

The Council has decided that the legacy of £5,000 bequeathed to the Institution under the will of the late Sir Edward Manville shall be devoted to the founding of a scholarship having the annual value of £150 tenable for three years, to be known as the Manville Scholarship, on the lines of the Duddell Scholarship, which is awarded to boys under nineteen to enable them to take whole-time day courses in electrical engineering. The first award of this scholarship has been made to Mr. K. C. Pounds.

Magnetic Crack Detectors

Examination of Motor and Aero-Engine Parts

CRACKS in iron and steel are due to strain, or heat treatment and faulty grinding. Many of them are invisible to the eye, even when aided by a magnifying glass, while scratches, or tool and bearing score marks may easily be mistaken for them.

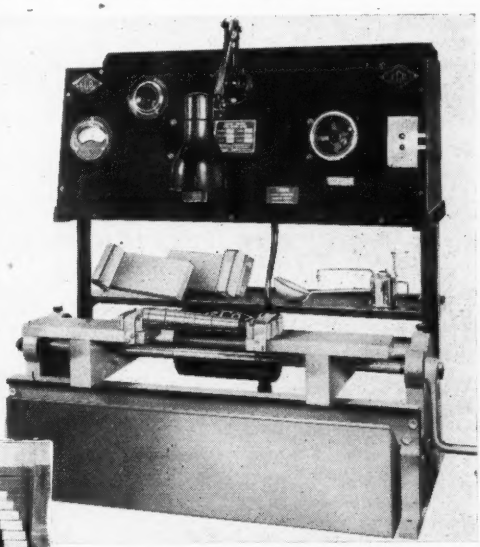
While the radiographic method of crack and blow-hole detection possesses undoubted advantages when the trouble lies any distance below the surface, for superficial cracks and even defects as much as ¼ inch below the surface, the magnetic crack detector offers advantages in the speed and economy of its application.

The general principles of crack detection by the magnetic method have been dealt with in the *Electrical Review* of April 4th, 1940, p. 519. They consist briefly of subjecting the part under test to a magnetic field and applying a magnetic powder, or a liquid medium containing such powder to the surface that is suspect, so that any polarity due to a crack is rendered visible to the eye by collection of the magnetic particles over it.

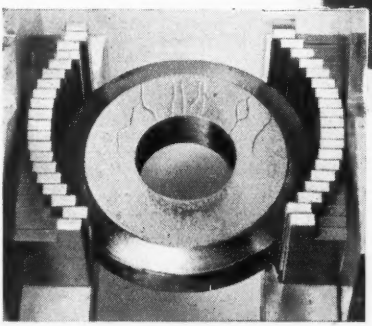
One feature of the crack detectors made by Equipment & Engineering Co., Ltd., known as the "Magnaflux," is the laminated pole tips between which the object is mounted for inspection. A few seconds only are needed to adapt them to objects of almost any shape by merely sliding the laminations up to the contour of the specimen. Another feature is the means for controlling the magnetising current, which is important on account of the need for avoiding super-saturation, or insufficient saturation; there is an optimum degree of magnetisation to give the most readily seen and crisply defined outlines of the cracks.

There are two main methods of controlling the magnetising current and also embodying the function of demagnetising to remove the residual magnetism and allow the part to be removed from the pole pieces. The first method is the use of a potentiometer with sliding contacts which allow the current to be regulated and reversed. By this means the residual influence can be reduced by reversal. This is the older method of control and entails greater time in manipulating the potentiometer contacts. A quicker method embodies the use of a large condenser which is charged up while the magnetising current is applied to the energising coil. Upon switching off, the condenser is reversed in connecting to the coil so that its oscillating discharge neutralises the residual magnetism. The current regulation is in this case adjusted by a simple rheostat. Both these methods of control are patented features of the manufacturers.

The production model for quantity testing

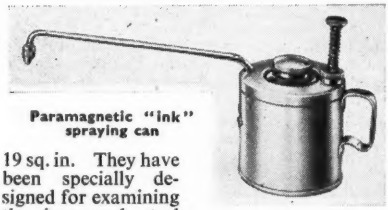


"Magnaflux" crack detecting outfit



Sliding laminated pole-tips adaptable to shape of specimen to be examined

is perhaps the most interesting at the moment. This is made in sizes which take parts up to 30 in., 62 in. and 69 in. length, the respective cross sections being 7 sq. in., 12 sq. in. and



Paramagnetic "ink" spraying can

19 sq. in. They have been specially designed for examining the iron and steel parts of vehicle and aircraft engines. By means of a special pump provided with an agitator, "ink" drawn from a well in the dip tray can be pumped through distributing arms to a nozzle which can be directed on to any part of the work. Many other designs, some of them semi-portable, are made. The type KE detector has been designed for the testing of rolling stock axles and crankshafts without removing the wheels. For this purpose the plant is arranged in a pit in order that the wheels and axles can be easily rolled from the rails straight on to the testing bed.

A feature of considerable interest in connection with the process of crack detection is the "ink," which is a suspension of paramagnetic particles of colloidal fineness dispersed in a medium of suitable viscosity; evidently the work of considerable research, this almost transparent oily medium feeds readily over the surface, goes a surprisingly long way, and can be used many times if not contaminated with grease or oil. Alternatively a "Spray-flux" dry powder can be used, this being blown on to the part with a pair of bellows.

Demagnetisation of the tested parts is effected by laying the objects on a horizontal platen magnet, or passing them through a rectangular-shaped coil energised by AC; small components can be slid through the coil on an inclined chute, the demagnetising operation being practically instantaneous.

While magnetic crack detection is not by any means a new method, it has kept fully abreast with the demands of modern machine parts, and in its latest form is doing invaluable work in the motor vehicle and aircraft industries and in road and rail transport undertakings.

American Electrical Appliance Prices

Must Not Exceed March, 1942, Level

FULL particulars were given in the June *Electrical Merchandising* of the price control measures instituted by the Office of Price Administration in respect of electrical appliances. The equipment covered includes radio sets and phonographs; vacuum cleaners and carpet sweepers; refrigerators and ice boxes; washing machines; sewing machines; stoves and ranges; small appliances—irons, toasters, glass coffee makers and mixers; floor lamps and bridge lamps; electric lamps; and ironing boards.

The regulations stipulate that the price of any appliance sold or offered for sale by a dealer to a customer or a supplier to a dealer must not be greater than the price charged for the article in March, 1942. There is no element of price *fixing* in the regulations; it is therefore possible for different dealers to sell similar appliances at different prices. Again, a retailer may have charged different customers different prices for the same article in which case the "ceiling" will be the amount charged to the customer to whom the appliance was sold at the highest price. He is not debarred from selling goods at less than the maximum price. Different brands of the same type of appliance are considered to be different articles, each with its own price "ceiling."

If the highest price charged by a retailer during March last was lower than the minimum price required by a fair trade agreement the retailer is nevertheless "frozen" to the price he actually charged.

Similar considerations apply to transactions between suppliers and retailers. The retailer is prohibited from paying any more for goods delivered on and after May 11th than the highest price charged by his supplier to a retailer of the same class during March in spite of the fact that he may be under a contract with his wholesaler for delivery of goods after May 11th at a price that is higher than the wholesaler's maximum price.

Exception to the general rule is made where for any reason the "ceiling" may be unreasonably low, for instance where an appliance has been marked down on the occasion of a special "sale." In such a case relief can be granted by the O.P.A.

All retailers are required by the regulations to exhibit in their establishments the "ceiling" prices of all the articles sold either by marking them on appliance labels or by means of a list prominently displayed.

Gauge Design

RECOMMENDED designs for all of the common types of inspection and workshop gauges for plain and threaded work are being produced at the request of the Institution of Production Engineers in close collaboration with the Controller of Jigs and Tools at the Ministry of Supply. Although not yet completed, such designs as have been agreed upon have been issued as B.S. 1044 by the British Standards Institution, 28, Victoria Street, London, S.W.1 priced at 5s. 6d.

Rural Amenities

Plans for Spreading and Cheapening Electricity

LORD JUSTICE SCOTT'S Committee on Land Utilisation in Rural Areas published its report last week. The Committee was appointed by the Minister of Works and Planning "to consider the conditions which should govern buildings and other constructional development in country areas consistently with the maintenance of agriculture, and in particular the factors affecting the location of industry, having regard to economic operation, part-time and seasonal employment, the well-being of rural communities, and the preservation of rural amenities."

Naturally in such consideration the part to be played by electricity had to be studied and evidence in this regard was given by Mr. J. M. Kennedy, on behalf of the Electricity Commission, and by Messrs. A. J. Fippard and J. I. Bernard for the British Electrical Development Association, which influenced the Committee in making a number of recommendations.

Great stress is laid in the Scott Committee's report upon the part to be played by electricity in the revival of rural life, and sweeping reorganisation proposals are put forward

The report first briefly outlines the nature of the British countryside and the factors which have moulded it, and reference is made to the drift from the land which has characterised the present century. One potent cause of the latter tendency has been the lack of the amenities available to the urban population, including electricity. The electricity supply authorities developed their rural areas very considerably in pre-war years but, even so, according to the evidence of E.D.A., it was estimated that in 1939 about one-third of all dwellings in rural district areas were not yet electrified. A large proportion of these were farms and agricultural cottages which, owing to their isolated position, were the most expensive and difficult to connect. It has been estimated that only between 25,000 and 30,000 agricultural buildings out of a total of 365,972 were served with electricity in 1938. Gas was mainly restricted to small towns and larger villages owing to the cost of laying mains and supply pipes.

Expansion of Towns

The spread of towns into the countryside is considered by the Committee. Apart from the desire of town dwellers to enjoy something of the rural life, industry has moved out, too, mainly on account of the development of road transport and the freedom from dependence upon coal which electricity transmission has brought. This intrusion has often tended to spoil the country, but it has also had beneficial effects. Some witnesses considered that a judicious mixture of town and country in this way has been a good means of revivifying rural life and bringing back prosperity to the countryside.

Factories often bring in their wake an improvement in the amenities of a neighbourhood—electricity is mentioned as one. On the other hand it has sometimes been found that electricity, although thus made available, has been too expensive for the countryman with his low wages. It is thought that the war has not greatly changed the conditions under which rural workers live.

Referring to the possible continuation of the pre-war tendency of industries to disperse (particularly the lighter ones), the Committee considers that the effects may be disastrous to agriculture and the beauties of the countryside if uncontrolled. This leads to a study of planning powers and recommendations aimed at revivifying country areas. There are suggestions for the improvement of rural housing, one of which is that new houses should be built ready wired for electricity, and appropriately constructed to receive gas and water supplies, even if these are not immediately available.

Electricity Essential

It is considered that the supply of electricity is an essential service which in due course should be available in the home of every citizen in town and country alike, at no higher price to the consumer in the country than in the town. It refers to the national basis of the postal system as a parallel. Evidence was given that a comparable national supply of electricity could be attained by appropriate organisation of the distribution side of the industry, and that parity of cost between town and country could be achieved without increasing the burden on the town. The Committee says that mindful of the progressive attitude of industry and of the excellent work of many distributing companies, marred only by the lack of resources or initiative in some of the smaller or older units, it recommends that the Electricity Commissioners should be instructed to prepare a scheme for the

reorganisation of electricity supply to consumers and to make a report for the consideration of the Government. The scheme should pay attention to the following possibilities which were brought forward in evidence:—

(*a*) The standardisation of voltage throughout the country and the conversion of all DC to AC.

(*b*) The standardisation of all fittings and regulations regarding insulation, wiring, etc.

(*c*) The rationalisation of supply areas.

(*d*) The standardisation of charges throughout the country, preferably on a flat rate per unit, with two-part tariff facilities, or graded according to consumption and/or situation.

(*e*) The provision of a supply within a given period of years after the war to every village of 250 or more inhabitants throughout the country, and the laying of a service line free of charge to every dwelling or other occupied building—the only capital charge to consumers being that of wiring their own premises and providing their own equipment.

(*f*) The provision of a service line on request, without charge, to every village or hamlet of less than 250 inhabitants and every farm and industrial establishment within 100 yards of a supply cable, and the fixing of reasonable standard charges (either on a capital or rental basis) for supply lines beyond that distance.

Effect on Supply Costs

In making these recommendations the Committee says that it is influenced by the evidence received of the success attending comprehensive schemes for rural supply, it being shown that farms are large consumers of electricity, and that such schemes, especially where gas is not available, have resulted in an actual lowering of charges to *urban* consumers whose consumption, often for lighting only, is relatively small.

It is suggested that the under-eaves system of distribution in villages should be considered as being compatible with the æsthetic standards which such bodies as the Council for the Preservation of Rural England desire to see adopted, it being much less costly than any underground system.

At present the industry is to all intents and purposes exempt from planning control because its units are statutory undertakings. While in the past with *local* town and country planning this position has been defended, the Committee regards it as essential that these and all other statutory undertakings should come under national control. This reform, it is stated, will necessitate careful consideration by each House of Parliament of its procedure for Private Bill legislation.

It is also recommended that gas should be brought under national control and that the Ministries of Fuel and Power and of Agriculture, in conjunction with bodies representing the industry and in consultation with the Central Planning Authority, should examine the possibilities of extending gas supplies to rural areas and prepare plans accordingly.

The Committee suggests that the position with regard to wayleaves should be examined and that electricity, gas and water supply undertakings should be placed on a comparable footing, and provision for the requisite rights of compulsory acquisition of land and wayleaves should be embodied in local planning schemes.

Rural Industry

One chapter of the report is devoted to industry in country areas. Several reasons for the encouragement of the establishment of suitable industries are set forth although it is pointed out that there may be a danger of their attracting young people away from agriculture. "Suitable" industries are defined as those closely connected with agriculture or forestry, or those relying particularly on female or juvenile labour, *e.g.*, canning, jam making, agricultural implement manufacture, fertiliser production, furniture making, glove making or hosiery. Passing reference is made to the location of public utility undertakings in rural areas when circumstances make it desirable. It is said that industrial units of this type are mainly unsuitable in country districts because they introduce a note of incongruity. Sometimes, it is added, the reverse is the case and they may actually be of a pleasing character.

The conclusion is reached, after studying the character of modern industry, that no modern factory can be located in the village (the ordinary village having less than 1,500 inhabitants) without the village changing its character and becoming in fact a small town. On the other hand, the small country town suggests itself as a suitable place for small industrial units.

Planning and Development Methods

Following chapters on housing and planning in country areas and miscellaneous constructional development the Committee proceeds to study planning and development machinery and procedure. It visualises the machinery as a standing committee of the Ministers concerned under the chairmanship of a non-departmental Minister of Cabinet rank; the Government Departments concerned with development; a Central Planning Commission; and such *ad hoc* bodies as may be needed to carry out functions not already covered by existing Ministries or other authorities.

The procedure outlined covers such matters as national land planning and zoning,

control and ownership of land, and the status and training of planners and architects.

The Committee proposes a five-year scheme of town and country planning, including programmes for electricity, water and gas based on its recommendations, the first year being devoted to a survey upon which these programmes can be formulated.

Professor Dennison Demurs

In the course of a minority report, in which he approaches the whole subject from a very different angle from the majority, Professor S.R. Dennison comments on the statement that electricity, as an essential service, should in due course be available to all in town and country alike at a similar price. He says that although this refers to electricity the approach is similar for the other public services. It is held that the recommendation was " influenced by the evidence received of the success attending comprehensive schemes for rural supply," such schemes having " resulted in an actual lowering of charges to urban consumers, whose consumption, often for lighting only, is relatively small," but Professor Dennison considers this to be a misrepresentation of the general sense of the evidence.

From the statement quoted it will be seen that emphasis is on consumption; but the urban consumers not only have low consumption—the capital costs of supplying them are also low. The evidence strongly stressed the importance of capital charges in the provision of utility services; such charges are, indeed, a major element in the costs of provision of electricity supply. It is, moreover, obvious that the capital costs per consumer of supplying a sparse population must be very much greater than those of supplying a dense population.

If, therefore, the rural areas are to be supplied at the same price as urban areas, this could only be by means of throwing part of the extra cost of supplying the rural consumer on to the urban consumer. Reorganisation of areas of supply would not abolish the physical fact of different densities of population; it would simply mean that areas with low capital costs per consumer would be subsidising areas with high capital costs. This, says Professor Dennison, was definitely stated in evidence.

Moreover, the question of reorganisation of supply of public utilities raises matters of high technical complexity, and he does not consider it to be within the Committee's province to make any recommendation on this.

The " Battle for Fuel "

Effective Appeal to Consumers

IN the B.B.C.'s Home Service programme on Sunday last Commander Stephen King-Hall, who is acting as chairman of the Fuel Economy Publicity Committee, introduced the intensive campaign for the voluntary saving of fuel which is being organised by the Ministry of Fuel and Power. In telling manner he warned the public that the existence of the country depended on adequate supplies of power to the factories and the Government sought the voluntary co-operation of the people in this " Battle for Fuel," which was considered preferable to compulsory rationing. Production of coal could not be great enough to permit householders to consume as much as they did last year; millions of tons had to be saved. Commander King-Hall said that the whole world would watch the course of this " battle " to see whether the free men of this country would freely make the sacrifices necessary for victory.

Calculating " Targets "

In the national Sunday and daily newspapers the first of the new series of advertisements has appeared. It sets out graphically the proposed allowances for consumers in the three " zones," into which the country was divided in the rationing proposals annexed to the White Paper on Coal. The gas, electricity and paraffin equivalents of coal are stated and two examples are given to show consumers how to work out the " target " figure for the current year, which they should not exceed. The " fuel unit " is ½ cwt. of coal, 500 cu. ft. of gas, 50 kWh of electricity, or 1 gallon of paraffin.

Harrods' Exhibition

A fuel saving exhibition has been arranged at Harrods, Ltd., Brompton Road, London, S.W., and it was formally opened last week by Mr. Tom Smith, M.P., Joint Parliamentary Secretary to the Ministry of Fuel and Power.

The exhibition has been organised with the co-operation of the Ministry of Information and the industries concerned, namely, solid fuel, gas, electricity and oil and paraffin. It is entirely concerned with domestic fuel economy and its main object is to provide the housewife with practical hints on fuel saving in all its phases.

The series of shops in the exhibition hall have been converted into model kitchens, living-rooms, bedrooms, bathrooms, etc., and in these rooms domestic economies are demonstrated. From the electrical point of view the principal suggestions are for reducing lighting consumption and they include the replacing of lamps in various rooms by those of lower wattage. Ways of saving electricity by people who have electric cookers, water heaters and refrigerators are also illustrated. Experts are in attendance to give practical demonstrations on fuel economy in all its aspects. An information bureau is included where questions will be answered throughout the period of the exhibition The exhibition closes at the end of next week.

CORRESPONDENCE

Letters should bear the writers' names and addresses, not necessarily for publication. Responsibility cannot be accepted for correspondents' opinions.

Elastic Economics

I HEARTILY agree with your correspondent, "Cable User" (*Electrical Review*, August 7th). At the time that an impassioned appeal was being made for aluminium saucepans I wrote to the Ministry concerned suggesting that the then large stocks of aluminium ware in shops should be bought up. The reply was that this course was "not economical." I wrote stating that I understood it was a question of life or death, not economics; but the Ministry didn't have any answer to this.

We are far too half-hearted in these matters. You can bet Herr Schmidt has had his garden hose taken away long ago—and without compensation other than some post-war credit.

Incidentally, I have a house in London from which half a hundredweight of ornamental iron chain has been removed at considerable cost in man-power. I could put my hands on half a hundred tons of much better scrap which nobody seems to want.

Wymondham, Norfolk. T. J. BARFIELD.

Post-War Supply Problems

WE hear a lot about after-war planning, but most of it is concerned with building. There are, however, other aspects which more intimately concern the electricity supply engineer. As we well know, the position of raw materials will be most awkward. Many of us are unfortunately old enough to have experienced one after-war period, with its attendant problems. The last one was child's play compared with what must be anticipated. We are not only using up all stocks of materials, but are busily employed destroying, with scientific thoroughness, many of the sources of such materials.

Of course, we may finish the war with large quantities of materials, accumulated by the Services, still on our hands, and available for distribution to factories. No reliance, it is feared, can be placed on such a source, and we must anticipate an acute shortage. On the other hand, everything we shall need, and everything of which the public is now deprived, will have to be manufactured anew. The present-day bare counters in almost every shop or store tell a depressing story. All these stocks have got to be replenished from the factories, which will spring up everywhere, demanding power immediately.

The present war factories will also continue for a time. After the last war we heard of factories making war materials for two years and more, until their contracts ran out. Much of such materials it was known at the time would never be used, and actually were scrapped. Cables and transformers will be very much in demand and subject to worse delay in delivery than we are getting now.

The public is looking forward to the end of black-out restrictions with a view to a glorious blaze of light both inside houses and in the streets. If the public is not warned the result of unrestricted lighting and heating in houses, shops and cinemas will end in frequent enforced black-outs. A burnt-out transformer in those days will be a serious matter, owing to delay in replacement. Then street lighting cannot possibly be resumed in most districts as it was before the war until every lamp is overhauled. Many street lamps no longer exist due to air-raids, accidents and trolley-buses. The globes and fittings of those that remain are already in such a state that even if lamps were inserted and the "juice" switched on, very little light would result. Street-lighting staffs are in the army or munitions, and will not be available for some time. Many mains-laying schemes which, just before hostilities began, were considered urgent, have been held up indefinitely. They will be still more urgent when hostilities cease, and there will be no materials available to use on the work.

Unless the public realises now what the position will be, bitter disillusionment will follow, and as usual, electricity supply engineers will be the scapegoats. It is a common failing of architects to design buildings and overlook the accommodation for the electrical gear without which the building would be useless. Dare we hope that a similar failure to take less obvious matters into consideration will not nullify all the thought which is now being given towards smoothing the transition from war to peace?

Holloway, N.7. W. E. BRADSHAW.

Technical Data on Fuel

A THIRD impression of the fourth edition of "Technical Data on Fuel" has now been published by the British National Committee of the World Power Conference, and copies can be obtained from Mr. M. W. Burt, manager and secretary, Society of British Gas Industries, Uplands, Epsom Road, Guildford, Surrey. The price remains unchanged at 12s. 6d. net (postage 6d.). The opportunity has been taken by the editor, Mr. H. M. Spiers, to make a few corrections. A new edition of the work is in preparation and will, it is hoped, be published in about a year's time.

PERSONAL and SOCIAL

News of Men and Women of the Industry

THE Central Electricity Board has appointed **Mr. A. R. Cooper,** A.M.I.E.E., at present chief assistant operation engineer at its head office, to be operation engineer for South-East and East England in succession to Mr. W. S. Burge whose appointment as district manager of the Central England area was announced last week.

Mr. Cooper, who entered the service of the Board as assistant operation engineer for North-West England and North Wales in 1935, gained his early experience with John Brown & Co., Sheffield and Clydebank, in the development of power generation schemes and colliery and coke oven plants in Yorkshire. From 1928 to 1934 he was chief electrical engineer to Pearson & Dorman Long, Ltd., and organised their electrical development of the Kent coalfield. Immediately before joining the Board's staff, Mr. Cooper was personal assistant to the late Mr. G. A. Mower, governing director of the Sturtevant Engineering Co., the Igranic Electric Co., and associated companies. He has been chief assistant operation engineer of the Board for the past five years.

News has reached his relatives that **Mr. C. White,** of the F.M.S. Electricity Department, has arrived safely in Australia after the Japanese occupation of Singapore. He was formerly assistant consumers' engineer at Barking. With him was **Mr. W. S. Foley** who before going to Malaya was meter test room superintendent at Barking.

The Stoke Newington Electricity Sub-Committee reports a breakdown in the DC supply to the North-Eastern part of the borough recently and places on record its appreciation of the services of **Mr. E. W. Callow,** the distribution engineer, and **Mr. R. C. Harris,** assistant distribution engineer, in connection with the failure.

Dr. C. C. Paterson, a director and head of the research organisation of the General Electric Co., Ltd., gave a talk on " Light for Nothing " in the B.B.C.'s Home Service last Saturday. In it he explained in simple terms the mysteries of the fluorescent lamp and described the steps which had led up to the daylight effect which is obtained in the modern type.

After a reunion and tea of the Birmingham Electric Club at the Grand Hotel on September 7th, there will be a session of the Club's " Brains Trust " who will endeavour to solve members' electrical problems. The president **(Mr. J. W. Donovan)** will act as question master and the Trust will comprise Messrs. F. J. Cole, A. M. Fletcher, C. F. Partridge, E. A. Reynolds and H. Williamson.

In connection with the Brush Electrical Engineering Co.'s scheme for training young engineers, the names of the winners of the two " Brush " scholarships for 1942 have been announced. These scholarships are awarded to enable students of limited means to take advantage of the training afforded by the Brush College Apprentice Sandwich Course. The company presents four scholarships, each of the value of £75, tenable for four years, the first year of which is spent in the works at Loughborough, and the remaining three at any British university the student then returning to the company's works for a final year's practical training. The winners of the scholarships for 1942 are **Mr. R. Parker,** of Swansea and **Mr. J. Wilcox,** of Ossett, Yorks.

Mr. A. Bowes, commercial assistant in West Hartlepool Corporation Electricity Department is to retire in October.

Mr. M. G. R. Elliott, A.M.I.E.E., has been elected to the board of Lancashire Dynamo & Crypto, Ltd. Mr. Elliott, who was appointed London & District sales manager last year, joined the Lancashire Dynamo & Motor Co., Ltd., at Trafford Park in 1913.

Obituary

Major Henry R. Kindersley who has died as the result of a motor accident, was a director of the Burma Electric Supply Co., Ltd.

Will.—Mr. B. Rigg, a director of the Windermere and District Electricity Supply Co., and the Keswick Electric Light Co., left £101,872, with net personalty £34,378.

I.E.E. Meetings

ALTHOUGH the nominal date of the commencement of each year's session of the Institution of Electrical Engineers has been October 1st, the opening meeting at which the new president delivers his inaugural address has not hitherto been held until the end of that month, while the chairman of the four Technical Sections have not presented their addresses until a month later.

The Council has found it advantageous in present circumstances to hold the initial meetings earlier than has been usual in past years. Accordingly the first ordinary meeting of the 1942-43 session will be held on October 1st and those of the technical sections will take place during October instead of in November. This change, purely a wartime expedient, will thus permit the greater parts of December and January, when the black-out is at its earliest, to be left free of meetings. Details of the programme arrangements for the first half of the next session are to be announced shortly.

Parsons Memorial Lecture

Arrangements have been made by the Institute of Marine Engineers for the 1942 Parsons Memorial Lecture to be delivered by Dr. S. F. Dorey at the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W.1, on Wednesday, September 16th, at 5.30 p.m. The title of the lecture will be " Reduction Gearing for Marine Steam Turbines." Members of the I.E.E. are invited to attend.

COMMERCE and INDUSTRY

Heavy Waste Fine. Licences for Exports.

High-Frequency Apparatus

The Minister of Home Security has issued the Control of High-Frequency Apparatus Order, 1942 (S.R. & O. 1564, price 1d.). This amends the Order of similar title made in 1940 (S.R. & O. 1644) by permitting the use of apparatus by any person under the authority of a permit granted by the Postmaster-General who may stipulate the conditions under which the apparatus may be used. Article 2, Paragraph (1) of the original Order, which specified classes of persons to whom permits might be granted, is cancelled.

The Aliens (High-Frequency Apparatus Restriction) Order, 1940 (S.R. & O. 1425) has been revoked.

Further Lighting Summonses

At Bow Street Police Court on August 20th the United Artists' Corporation, Ltd., was summoned for wasting electricity. The prosecution stated that at the London Pavilion, Piccadilly Circus, on the afternoon of July 20th, the foyer which measures twelve by four yards was illuminated by sixty-four lamps with a total wattage of 3,190. The magistrate (Mr. McKenna) imposed a fine of £300, with £15 costs.

A similar charge against Esdaile Productions, Ltd., in respect of excessive lighting at the Whitehall Theatre resulted in the imposition of a fine of £50, with £15 costs. In this case Mr. McKenna said that there were mitigating circumstances.

The prosecution withdrew summonses against J. Lyons & Co., Ltd., and Criterion Restaurants, Ltd. The former company was awarded £15 costs, the magistrate criticising the prosecution's hasty action.

Export Control

Several classes of radio equipment are made subject to export licences by the Export of Goods (Control) (No. 34) Order, 1942 (S.R. & O. 1640 ; Stationery Office, 1d.). The goods included are receiving sets and chassis, transmitting apparatus, radio-gramophones, units incorporating electric motors, pick-ups, thermionic valve amplifiers, headphones and earpieces, microphones, loud speakers and units, radio valves and other electric discharge tubes and parts, and hearing appliances for the deaf.

East African Import Restrictions

Colonial Governments in East Africa (Kenya, Uganda, Tanganyika and Zanzibar) have announced that further restrictions on imports from overseas are to be imposed and imports are to be graded in three priority ratings in order that shipping space may be used to the best advantage. All existing licences to import goods from the United Kingdom have been recalled for review and a large number of them will have to be cancelled. Importation of United Kingdom goods covered by cancelled licences will be allowed provided that shipment from the United Kingdom is effected before August 31st. Import licences (including reissues of recalled licences) will in future be in a new form, indicating the priority rating, and will be issued in duplicate so that one copy may be sent to the overseas supplier. Instead of duplicate licences airgraph certificates will, if desired, be issued to importers for transmission to suppliers.

Old Appliances for New

Our Montreal Correspondent says that the Wartime Prices and Trade Board recently announced the suspension until further notice, " pending clarification of certain features," of the order requiring that persons buying replacements for electrical appliances and supplies should hand to the seller the defective article which was being replaced.

Under the order, consumers had to surrender useless or defective articles of the same kind when making purchases of new appliances, cords, switches, plugs and other electrical supplies unless dispensation was granted by the Administrator of Electrical Supplies. Exceptions were made in respect of sales to Government Departments, municipalities, public utilities and persons authorised by the Controller of Construction to use electrical supplies in new buildings.

Cable Plant Handed Back

Last week Mr. Roosevelt instructed the U.S Navy Department to return to private management the Bayonne (New Jersey) works of the General Cable Corporation which, as reported in our last issue, was taken over by the Navy Department in consequence of a strike. The strike leaders expressed their regret at the stoppage and promised that there would be no further interruption of work upon Government contracts.

Compensation for Supervisor's Dependants

The August *Electrical Supervisor* reports a successful claim against the employers of a member of the A.S.E.E. who received a fatal shock early last year. The member was engaged with another maintenance engineer in cleaning insulators in a rectifier enclosure. The high-voltage gear had been made " dead," but a 415-V transformer had to be kept in operation for emergency purposes and the deceased man came into contact with the terminals of this and was killed.

It is stated that the member was presumed to stand at the foot of a ladder while his companion mounted it to inspect the work. It was not known whether he had moved away or whether the ladder was in such a position as to give him sufficient room to move in safety. After the accident the terminal transformers were protected and switches were provided for the purpose of cutting off the transformer.

The employers denied liability and a writ was issued claiming damages from them under the Law Reform (Miscellaneous Provisions) Act and the Fatal Accidents Acts. The employers there-

upon paid the sum of £2,000 into Court, but after negotiations this was raised to £2,250 and accepted on behalf of the member's widow and two children.

Specification for Comparators

A further specification in the series of standards for engineers' precision tools has recently been issued, namely B.S. 1054, for comparators for external measurement, which type consists of a rigid stand supporting a measuring head over a work table. The specification applies to comparators with measuring heads of low and minimum magnification factors and is applicable to measuring heads operated by mechanical, electrical, optical, fluid, or pneumatic means. Owing to the diversity of designs of this type of measuring tool the specification is concerned mainly with accuracy of performance. Copies may be obtained from the British Standards Institution, 28, Victoria Street, London, S.W.1, price 2s. 2d., post free.

Welding Calculator

Philips Industrial (Philips Lamps, Ltd.), has just issued an interesting and practical device known as the " Philips Welding Calculator." Its purpose is to provide the welding operator, in a convenient and concise form, with much useful data relating to the uses and operation of Philips welding electrodes. The calculator consists of a double blue card envelope with various cut-out openings ; inside is a disc which is rotated to show at a glance the required data. One side gives useful information relating to the various types of Philips electrodes whilst the other side bears details of the Philips type 50 high-speed electrode, and gives all essential data required for welding various thicknesses of metal from 20 SWG to 1 in. The calculator can be obtained from the company's branches and agents or by application to its Publicity Department, at Century House, Shaftesbury Avenue, London, W.C.2.

The Power of the Penny

More than ten million pennies a week are now being subscribed to the Red Cross Penny-a-Week Fund. In each of 120 firms and undertakings in England and Wales the workers have now contributed £1,000 or over in weekly pennies, headed by L.M.S. employees with a total of more than £60,000. Approximately seven millions of the Fund's ten million contributors are men and women workers in trade, industry and public service; the remaining three millions contribute at home through house-to-house collections in more than 800 centres. More than £3,000,000 has been raised in this way. Every penny of that sum has already been spent, however, and the need of the Red Cross is greater than ever. Millions more contributors are urgently needed.

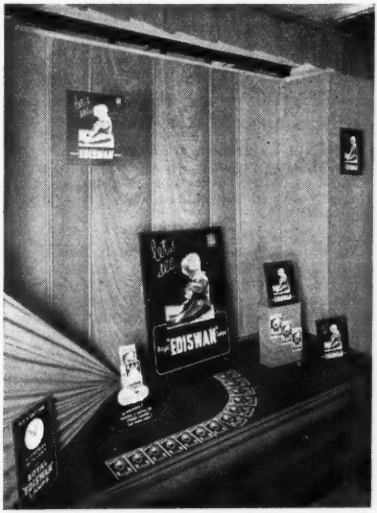
Smoothing Industrial Difficulties

Ways and means of securing more efficient and more economical methods of making, distributing and selling civilian goods in Canada are being studied by the " Division of Simplified Practice " recently set up by the Wartime Prices and Trade Board. This Division is assisted by 140 advisory committees, representing manufacturers, distributors and retailers, which have submitted a great many cost-reducing ideas. One of the principal aims is to reduce the number of varieties of manufactured products.

While releasing the maximum man-power, material and machines for direct war production, the Division is set the task of ensuring that essential civilian requirements of scarce materials are met in an orderly and equitable manner. It also aims at assisting manufacturers and distributors to operate under the price " ceiling," reducing or avoiding subsidies and maintaining the business structure as intact as possible so that it will enter the post-war period in an economically sound condition and under its own control. To act as a clearing house for surplus goods the Division has set up a " Dormant Stock Department," which has already diverted to direct war use many articles which might have gone to the scrap heap.

Lamp Publicity

The lamp publicity material for 1942-43, prepared by the Edison Swan Electric Co., Ltd., aims at " keeping the ball rolling " while paying careful attention to the various appeals for war economy in paper and other essential publicity



The " Ediswan " lamp window display for 1942-43

materials. The centrepiece for the window display shown in the accompanying illustration, is linen again this year; the showcard and window bill are reduced to 11 in. by 9 in., the clock card has a wartime function and there is a counter tablet bearing the Royal Arms. This change of publicity sustains interest, and still keeps well within the confines indicated by national necessity.

Film publicity will be maintained in the " Signs of the Times " cinemagazine, and a new

series is expected to be put into production shortly for the coming season. The successful idea tried out last year—luminescent roof cards in underground coaches—will run into the second year and "Ediswan" road signs will be continued. All this will be supported by national and trade Press advertising—the entire scheme being based upon the desire to give the "Royal Ediswan" lamp dealer as much help as can possibly be given in times of emergency.

Increase in E.T.U. Membership

It is reported that the membership of the Electrical Trades Union at the end of last year was 97,298, an increase of nearly 25 per cent. compared with a year before.

Painting of Buildings in Wartime

The British Standards Institution has just issued a British Standard (B.S.1056) to cover the wartime painting of buildings. The object of this specification is to indicate how, in view of the shortage of raw materials and in the interests of national economy, paints and paint materials can be most wisely used on buildings. Copies may be obtained from the B.S.I. at 28, Victoria Street, London, S.W.1, price 2s. 3d., post free.

Standard Commercial Invoices

A British Standard (B.S. 1055) has recently been issued for commercial invoices. It is designed to economise in paper and labour. Copies (1s. 3d. post free) may be obtained from the British Standards Institution.

Cable Makers' Wages

The Joint Industrial Council for the Electrical Cable Making Industry states that there will be no cost-of-living alteration in wages on the third pay-day in September.

Fatalities

An inquest was held at North Shields last week on John Emmerson Fairless, aged nineteen, an apprentice engineer, who died from electric shock in his home. It was stated that Fairless was found lying on the bathroom floor floor undressed. There was water in the bath, but he did not appear to have been in it. A long flex from the dining room wireless set was connected to a pair of headphones which he was wearing. Dr. E. Gofton, who gave medical evidence, said it was surprising to him that a lead from a wireless set should carry a lethal current. Mr. E. Park, a wireless dealer, said the set was quite in order. There was a connection on the set for a loudspeaker and the voltage to the terminals was 240, which was too large for earphones. In his opinion Fairless's body must have been damp or come in contact with the water. A verdict of "Accidental death" was recorded.

William Greenhalgh, aged eleven, came into contact with a live wire in an empty house in which he was playing at Cheetham and was killed.

While using an electric drill at an engineering works Arthur Wright, of Scunthorpe, received a fatal shock.

A thirteen-year-old boy, Jonathan Adam Binder, received a fatal electric shock last week while flying a kite near overhead power lines. He had been using a fine copper wire found on a salvage heap to fly the kite and the wire touched the overhead line. A verdict of "Death by Misadventure" was recorded at the inquest at Manchester.

At an inquest at Bradford last week it was stated that Mrs. M. M. Whybrow, aged thirty-six, who was found dead at her home, had a pair of scissors in her right hand and in her left hand a length of flex connected to a wall switch that was on. There was an electric iron on the table. Medical evidence was given that she had died from electric shock. Returning a verdict of "Accidental death" the coroner remarked that an electrical repair seemed so simple that one was tempted to take unjustifiable risks. Housewives should either have such repairs done by someone with experience or be careful to switch off the electricity at the main.

Trade Announcements

The new address of the temporary London office of Moffats, Ltd., is 1, Beaufort Gardens, Hendon, London, N.W.4 (telephone : Hendon 8449).

Richardson & Co., Cornbrook Park Road, Manchester 15, announce that they are again producing distribution boards, switchgear, etc. Stocks of their "R" type fuses are also available.

Change of Name

M. W. Woods, Ltd., have changed their name to Woods of Colchester, Ltd., and have moved their registered offices and works to Braiswick Works, Colchester. The telephone number and telegraphic address are unchanged.

TRADE MARK APPLICATIONS

RECENT applications for British trade marks include the following, objections against which may be entered within a month of August 19th.

SAMSULL. No. 619370, Class 9. Electric batteries. Samuel Daniel Sullam, 72, Newman Street, London, W.1.

QUEEN SHRIKE. No. 619240, Class 11. Radio-controlled power-driven watercraft. The British Power Boat Co., Ltd., The Shipyard, Hythe, near Southampton.

INFORMATION DEPARTMENT

GENERAL inquiries from readers relating to sources of electrical goods, makers' addresses, etc., are replied to by our Information Department through the post. Inquiries should be accompanied by a stamped addressed envelope.

Our extensive records enable us to reply to most queries, but occasionally we ask for our readers' assistance in tracing names and addresses not known to us. We should be glad to have such information regarding the following:—

CONRADTY PRODUCTS, LTD.

RECENT INTRODUCTIONS

Notes on New Electrical and Allied Products

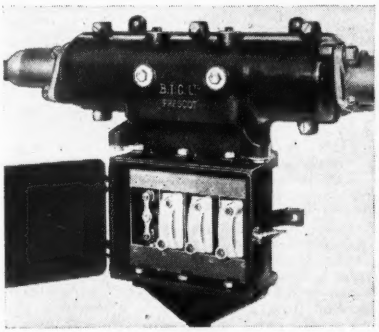
Tee-Box Distribution

TEEING-OFF from paper-insulated lead-covered feeder cables without cutting them is a simple means of economically distributing power inside industrial premises, with fused boxes bolted directly on to the tee-outlet limb of the cable chamber for protecting the branch circuit.

The boxes introduced by BRITISH INSULATED CABLES, LTD., Prescot, Lancs., can be fitted to new or existing main cable, thus enabling ring main or radial distributor principles to be adopted at will and, in particular, readily facilitating the addition of fresh loads to existing cables not fully utilised.

Substantial reduction can thus frequently be made in substation low-voltage switchgear as well as in the number or length of distributor cables needed for feeding relatively large individual loads or sub-distribution boards. Alternative forms of branch outlet chamber are available to suit conduit or outgoing cable up to 0.15 sq. in. ; it is omitted when the two-part assembly is to be bolted directly on to other equipment instead of being mounted on a wall.

The shallow depth of the assembly is valuable, especially in shops equipped with overhead



Fused tee-box for indoor cable distribution

cranes when cables are run in the valley joists. The split cable chamber will accommodate four-core cable up to 0.3 sq. in. or three-core up to 0.4 sq. in., with glands for wiping or mechanical grip and plugs for compound filling. The fuse box has a hinged lid and accommodates a wedge neutral link rated at 200 A and three cartridge links with porcelain carriers, or four fuses for two-phase, four-wire outlets.

Soldering Irons with Neon Indicator

Speciality products of the ACRU ELECTRIC TOOL MANUFACTURING CO., LTD., 123, Hyde Road, Ardwick, Manchester, 12, include bench-type soldering irons fitted with a neon indicating lamp that glows so long as the element is " alive," thereby warning users to avoid wasting energy by switching off when not in use. The copper bits are readily interchangeable and easy to clean, a range of eight different sizes and shapes being available. This tool is supplied in ratings of from 80 to 250 W ; its base is made heavy so that it does not need to be screwed down to the bench and can thus be easily transferred from one place to another.

Neon Testers

Universal voltage detectors, including one model with a side clip for the vest pocket, are also offered by the Acru Co. They are about 2½

Neon glow-lamp polarity indicator

in. long by ¾ in. in diameter, and are suitable for use at from 150 to 400 V for determining, by the glow of a miniature neon lamp, the continuity of circuits, their polarity, or leakages. In addition, AC and DC mains may be distinguished by flicker if the user slowly shakes his head while observing the glow-lamp. The single core search leads are covered with specially tough rubber and are not detachable, so that they cannot be lost.

Torch Thermometer

A neatly contrived torch-like thermometer, which should have many household uses as well as in industry and science, is announced by E. E. O. ENGEL, 7, Templars Avenue, Golders Green, London, N.W.11.

The cylindrical casing made of moulded material contains an ordinary No. 8 dry-cell battery that

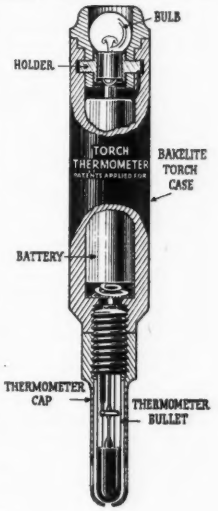


Diagram showing construction of thermometer

energises a miniature bulb which serves to indicate the temperature. The lamp is caused to glow when contact is made within a bullet-type mercury-in-glass thermometer head protected by a perforated metal cap. Separate bullet

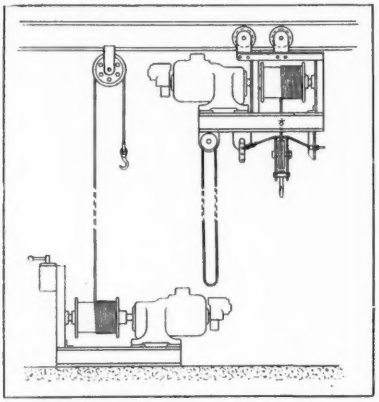
thermometers are obtainable for temperatures between 20 and 500 deg. C. fully guaranteed and readily interchangeable. Their sensitivity is said to be within one-tenth of 1 deg. C.

Specially long immersion bullets and protective caps can be furnished to users' specifications, while the device may be easily converted into a compact thermostat by removing the battery and lamp-bulb holder and fitting a terminal block in their place.

Lifting Tackle

A range of electrically operated winches and pulley blocks mounted on overhead runways has recently been put on the market by MARRYAT & SCOTT, LTD., 40, Hatton Garden, London, E.C.1, for raising and transporting about factories loads which may be too heavy for women to move.

A high degree of standardisation has been achieved, the driving unit being the same for both mechanisms. An enclosed motor of robust design is directly coupled to a reduction



Electric winch and overhead pulley block

gear which runs in an oil bath within oiltight casing. This method of construction affords a degree of silence that is unusual in gear of this type. A solenoid brake is applied to a drum on the end of the motor shaft remote from the gear, being released by an electrical solenoid at the same time as the motor is energised, the brake being automatically applied by a spring when the motor is switched off. By this means the " holding " of the load at any desired height is secured. A " dead man " device returns the controller to the off position when the control rope is released and a separate overwind switch is provided to prevent the operator inadvertently raising the load to a dangerous height.

The motors are interchangeable (DC, single-phase, or three-phase), and in order to ensure prompt delivery the makers maintain a stock of the special three-phase squirrel-cage motors ready to be applied. The present range of electric pulley blocks handles loads up to 20 cwt. at speeds of up to 30 ft. per minute and larger sizes are under consideration.

The electric winch will raise a load of 300 lb. at a speed of 50 to 60 ft. per min., but greater loads can be handled at lower speeds by multiple roping with a suitable snatch block. It has been specially designed for easy transportation from one site to another, the complete unit, including the controller, weighing approximately 2 cwt.

Hot-plate Cement

Electricity distributing authorities who are carrying out repairs to domestic and other appliances in their own workshops will be glad to know that the THERMAL SYNDICATE, LTD., Wallsend, Northumberland, is now able to supply a fused magnesia cement in which to embed the heating elements of reconditioned appliances.

This " M.60C " material is highly refractory, being a very good electrical insulator at high temperatures and an excellent conductor of heat, so permitting rapid transmission to the actual boiling plate, for example. The cement does not act in any way on the base-metal wire of which heating elements are made. It is obtainable in a powder form and has merely to be mixed to a suitable consistency with water and handled with a small trowel or spatula. It is stored in a metal container with a tightly fitting lid and it is preferable to moisten into paste only such an amount as is likely to be used within a few hours, otherwise its electrical resistance may be impaired.

The cemented hot-plate may be thoroughly dried out, slowly at first, either by low external heat or by passing a small current (preferably AC) through the embedded element. When properly dry the reconditioned hot-plate should be run at full heat for a short time before any cover plate is replaced.

Electricity at Port Arthur

PORT Arthur, Ontario, on July 1st celebrated payment of the last dollar of debt on its hydro-electric system, originated in 1885 and municipally owned since 1891, and its electric street railway, the first in North America to be built, owned and operated by a municipality.

The first electric lamps in Canada west of the Great Lakes were installed in Port Arthur (then Prince Arthur's Landing) in 1885, power being supplied from a generator in a machine shop and carried partly on hay-wire strung from trees. Then a mill generator gave the town its first electric street lighting in 1887. The town built its own steam generating plant in 1891 and the first 900-kW hydro-electric generator was installed at Current River in 1901. Street cars began operating in March, 1892, and the Ontario Legislature authorised the town to operate a street car service in Fort William. But the latter town would not agree to have a street railway with revenue going to Port Arthur, and the chief of police persistently stopped attempts to run a car over the boundary. Eventually, however, Port William yielded, and on June 1st, 1893, the twin-city system was inaugurated.

Since 1914 a public utilities commission has controlled not only the hydro-electric and street railway systems, but also the telephones and waterworks in Port Arthur, turning large deficits into handsome operating profits in each case.

Reconditioning Appliances

Good Results at Ilford

THE difficulties and delays which electricity supply undertakings are experiencing in getting repairs to domestic appliances done by manufacturers who are preoccupied with war work have rendered the provision of facilities for reconditioning apparatus more and more indispensable. This applies particularly to hotplates, the repair of which before the war was generally considered a matter outside the scope of a supply undertaking.

Ilford Electricity Department, which has for several years been operating a domestic appliance repairs department, is one of the undertakings which has recently turned its attention to hotplate reconditioning, and Mr. G. F. Gregory, the borough electrical engineer, is already very satisfied with the results. The cementing-in of new elements is apparently a process which is quickly picked up, but the pulling of the elements too tightly at the corners of rectangular plates seems to be one of the " snags " to be avoided. This was the cause of the only failure so far reported, but this difficulty has now been overcome. Unless a plate is very badly pitted, skimming of the surface by means of a lathe gives it a brand-new appearance. The Department finds that about 75 per cent. of the plates returned for attention are repairable.

Cementing new elements into hotplates and (left) skimming the pitted surface of a hotplate

As well as reconditioning all other types of domestic appliances—cookers, wash boilers, water heaters, kettles, irons, refrigerators, etc.,the Department handles a considerable amount of industrial equipment, including re-winding and reconditioning motors up to 10 HP. When it leaves the repair shop the apparatus in many instances is practically indistinguishable from new.

Certain of the machinery used in the repair work was constructed by one of the Department's employees mostly from scrap materials. A " home-made " motor-generator set (7 kW), for instance, provides DC for welding and for the use of a well-equipped meter testing department, while a compressor constructed from an old motor bicycle engine is used for air-blasting apparatus and paint spraying.

Electrodepositors' Society

THE first meeting of the Midland Centre of the Electrodepositors' Technical Society for the session 1942-43 will be held at the James Watt Memorial Institute, Gt. Charles Street, Birmingham, on Tuesday, September 1st, at 6 p.m., when the chairman of the Centre, Dr. S. Wernick, will deliver an address on " The Trend of Metal Finishing Development."

Dr. D. S. Anderson, principal of the Birmingham Central Technical College has informed the Centre that a course in electrodeposition has been arranged for the next session. Evening classes will not be held but Saturday and Sunday afternoon classes are being arranged.

ELECTRICITY SUPPLY

Reductions at Dartford. *Irish Disconnections.*

Cardiff.—TRANSFORMER PROTECTION. — To prevent complaints regarding noise, the main transformer chamber at a substation is to be enclosed at a cost of £600.

Clydebank.—REQUEST FOR REDUCTION.—A deputation from the Clydebank Corporation recently met Clyde Valley Electrical Supply Co. officials to endeavour to obtain a reduction in the price of electricity supplied to houses in the burgh. It was pointed out to the company that as the result of enemy action a large number of windows in houses had been boarded up which necessitated occupiers using considerably more electricity.

The company's representative replied that they had investigated the position and found that the consumption of electricity had fallen considerably since the enemy action. Also during the coal shortage many people had used electric heaters which, while increasing the consumption, had the effect of bringing into operation the cheaper rate. It was also stated that increased generating costs had been incurred, although the rate of charges was still on the same scale as before the war. No further action is to be taken by the Council.

Dartford.—TARIFF REDUCTIONS.—The borough electrical engineer (Mr. R. Daw) informs us that lower charges have been approved and take effect as from the first meter reading after September 30th. There will be a reduction of ¼d. per kWh in the lighting flat rate; cooking, water heating, and cooling flat rate; domestic two-part tariff (quarterly); domestic small power flat rate; business premises lighting for demand of ¼ kW and over; and business premises heating (restricted hour tariff). A reduction of 0.075d. per kWh is made in the case of cinemas (below 50 kW) and public institution buildings combined lighting and power tariff; cinemas (over 50 kW) and No. 1 power tariff; and No. 2 power tariff. Charges to high-voltage consumers are being reduced by 0.05d. per kWh.

Gravesend.—WITHDRAWAL OF INCREASES.—After considering a statement of the financial position of the electricity undertaking, the Town Council has decided to withdraw certain tariff increases as from October 1st.

SHELTER HEATING.—The Ministry of Health has approved the installation of electric heating points in a number of shelters.

London.—POPLAR.—Mr. R. Illingworth, the borough electrical engineer, has reported that a saving of £60 a week would be effected for a considerable time by arrangements made for the disposal of ash from the power stations.

A scheme prepared by Mr. Illingworth for the incorporation of switching relays in the public lighting system has been adopted by the Borough Council. The estimated cost is £1,389 and the work, which will include provision for time-switch control on tenement stairways, will take eighteen months to carry out.

Middlesbrough.—METERS FOR SHELTERS.—The Town Council is to spend £83 on meters required in connection with the heating and lighting of air raid shelters.

Northern Ireland.—GOVERNMENT REVERSE.—During the Committee stage of the Electricity Emergency Powers Bill in the Senate recently Senator Leslie moved an amendment confining the powers conferred on the Minister to the period of the war. The Leader of the House said that the Government could not accept the amendment as it would be necessary to continue control for a time after the war. Nevertheless the Senate approved the amendment by eleven votes to eight. The Bill passed the Committee stage.

Peterborough. — TRANSFORMER. — The Town Council is to acquire land for an additional transformer.

Overseas

Argentina.—ELECTRICITY CONSUMPTION INCREASES.—Figures compiled by the Association of Producers and Distributors of Electric Power in Argentina show that, contrary to expectations, the sales of electric power in the Republic during the first quarter of this year increased by 9.7 per cent., the total consumption being 504.5 million kWh, as compared with 459.8 million kWh in the corresponding three months of 1941.

Eire.—CONSUMERS DISCONNECTED.—The Electricity Supply Board is carrying out its threat to deal drastically with consumers who exceed their quota. Last week about 180 offenders were cut off, including two hotels in the same street. The guests had to stumble their way about the hotel and to their rooms by the aid of candles, lamps and torches. Tests are to be made during the coming winter to ensure that effective preparations have been made by all affected parties so that they will be able to comply with the provisions of the Emergency Powers (Control of Lighting) General Order, 1942, should their enforcement become necessary.

France. — WATER - POWER PLANS. — The Government has given the Société d'Etudes Hydro-Electrique Massif Central, which already operates a power plant at Aigle, the right to build a barrage at Chastiang. Plans for the new plant are said to be completed. Writing in *Le Flambeau*, an official of the Ministry for Economics and Industry stated that water power in France could yield at least 50 milliard kWh a year; at present it produced no more than 10 milliard kWh, and France was importing 25 million tons of coal a year to produce 40 milliard kWh. He hoped, however, that within ten years at least half of the hydraulic plants planned would be in operation. Consumption per head in France was 400 kWh against 700 kWh in Germany and 1,000 kWh in Switzerland, which meant that there was great headway to be made up in France.

Portugal.—LESS LIGHT.—Lighting in the city of Oporto is being reduced by half in order to economise fuel. Illuminated advertising signs have been banned.—*Reuter.*

Uruguay.—RESTRICTIONS IMPOSED.—It is reported that a reduction of 20 per cent. in power

and lighting consumption is being enforced in Montevideo. The use of illuminated signs and shop-window lighting in the city has been prohibited.

TRANSPORT

Eastbourne.—FUTURE OF TROLLEY-BUSES.—Mr. J. Atherton, general manager, Eastbourne Corporation Motor Omnibus Department, in the course of an address to the local Trade Council recently, said that although he would not advocate Eastbourne adopting trolley-buses, he looked to that vehicle for the most far-reaching development in road transport. To his mind scientists had not given sufficient thought to electric transport vehicles.

Liverpool.—TRAMWAY EXTENSION.—The Minister of War Transport has made the Liverpool Corporation (Tramways) Order, 1942, which authorises tramway extensions.

Salford.—DIMMED TRAFFIC SIGNALS.—A system of traffic signal lighting which dispenses with the need for screens and masks was demonstrated recently to officers of the Ministry of War Transport. By means of a transformer operated by a time switch the voltage is reduced until the signals show only a deep glow of colour visible at night from a distance of 200 yards.

FINANCIAL SECTION

Company News. Stock Exchange Activities.

Reports and Dividends

The Engineering & Lighting Equipment Co., Ltd., reports a trading profit for the year to March 31st of £32,581, as compared with £58,347 for the previous year. The reserves for income tax and excess profits tax receive £9,250, and, after providing for directors' fees, the net profit is £23,006 (against £18,469). Provision has been made for the first annual contribution of £6,700 to the redemption fund. The final ordinary dividend is 6 per cent., again making 10 per cent. for the year, and the balance carried forward is £4,610 (against £4,533 brought in).

The British Vacuum Cleaner & Engineering Co., Ltd., is raising its dividend to 15 per cent., less tax, for the six months to September 30th, 1941, against 10 per cent. for the eighteen months to March 31st, 1941. The net profit for the period is £49,697 (against £25,910).

Lancashire Dynamo & Crypto, Ltd., is again paying an interim dividend of 5 per cent.

Hall Telephone Accessories (1928), Ltd., is maintaining its interim dividend at 5 per cent. less tax.

W. Canning & Co., Ltd., are paying an interim dividend of 5 per cent. (same).

The General Electric Co. (U.S.A.) reports a rise in the value of orders received from $654,189,600 in 1940 to $1,132,837,000 in 1941. The net income increased from $98,241,000 to $177,197,500.

Thorn Electrical Industries, Ltd.—Speaking at the annual general meeting on Monday last, Mr. Jules Thorn, chairman and managing director, said that there had been a considerable increase in the company's business during the year and good progress had been made in the technical development of its products. On the Atlas lamp side it had been necessary to increase output and still higher production figures were being achieved in the current year. Large contracts had been obtained from many of the biggest factories in the country while business with municipalities, railways, and similar concerns was continuing to be developed. Satisfactory results had been achieved in the development of special types of lamps, culminating in important contracts.

The company's lamp cap factory had made good progress, had increased its output and was supplying not only the company's own lamp factories but also a number of other lamp manufacturers. On the Ferguson Radio side of the business they had had to suspend the production of commercial receivers but the manufacture of other important equipment was proceeding satisfactorily. They were still doing a substantial overseas trade.

The Mid-Southern Utility Co. has declared interim dividends of 2$\frac{3}{8}$ths per cent. on the "A," 1$\frac{9}{16}$ths per cent. on the "B" and 2$\frac{1}{2}$ per cent. on the "C" stocks. These dividends are the same as for last year.

The County of London Electric Supply Co., Ltd., is again paying an interim dividend of 3 per cent., less tax, on the ordinary stock.

The Bournemouth & Poole Electricity Supply Co., Ltd., has declared an interim ordinary dividend of 5 per cent. less tax (unchanged).

The South London Electric Supply Corporation, Ltd., has decided to defer consideration of the accounts until the full results for 1942 are available. Accordingly no interim dividend will be paid on the ordinary shares. For 1941 the ordinary dividend was 7 per cent., which included an interim of 3 per cent.

The Richmond (Surrey) Electric Light & Power Co., Ltd., is deferring consideration of accounts until the full results for 1942 are available, and no interim ordinary dividend will be paid. The ordinary dividend for 1941 was 6 per cent., of which 2 per cent. was an interim payment.

The North-Eastern Electric Supply Co., Ltd., has announced an interim dividend of 2$\frac{1}{2}$ per cent. (unchanged).

The Clyde Valley Electrical Power Co. has announced an interim dividend of 3 per cent. (unchanged).

The Cawnpore Electric Supply Corporation, Ltd., states that, after providing for debenture interest, the surplus for 1941 was £107,920, against £96,692 for 1940. The ordinary dividend is maintained at 10 per cent by a final distribution of 7 per cent. The chairman (Mr. K. A. Scott-Moncrieff) states that progress so far this year has been satisfactory although working expenses are likely to be higher.

New Companies

Q Vehicle Co., Ltd.—Private company. Registered August 14th. Capital, £100. Objects: To carry on the business of suppliers of electrically propelled and other vehicles, manufacturers of, and dealers in, vans, lorries, trucks, batteries, accumulators, parts and accessories, etc. E. Cecil Kny may appoint not more than three directors and the United Molasses Co., Ltd., not more than five; the remaining first directors are to be appointed by the subscribers. Solicitors: Linklaters & Paines, 97, Cannon Street, E.C.4.

Surrey Arc Welding Co., Ltd.—Private company. Registered August 14th. Capital, £500. Objects: To carry on the business of welders, mechanical, motor and general engineers, electricians, etc. Directors: G. V. Gibbs, Holmby House, Sanderstead Road, Sanderstead, Surrey, G. A. Blampied, 17, Netherfield Road, Tooting, S.W., and M. Harbour, 64, The Crescent, Belmont, Surrey. Registered office: Solent Works, Sanderstead, Surrey.

Applied Electrical Products, Ltd.—Private company. Registered August 14th. Capital, £1,000. Objects: To acquire, exploit, turn to account and deal with inventions relating to wireless telegraphy, and to carry on the business of radio, electrical, cinematograph, automobile and general engineers and fitters, etc. Directors: J. F. Anderson, 13, Beresford Drive, Woodford Green, Essex, and B. B. Delcanho, 12, Crosby Court, Greenhalgh Court, Finchley, N. Registered office: 1-6, Newbury Street, E.C.

Morgan Bros. (Electricals), Ltd.—Private company. Registered August 11th. Capital, £3,000. Objects: To acquire the business of an electrical engineer and refrigerator contractor carried on by Thos. J. S. Morgan at 105a, Walter Road, Swansea, as Morgan Bros. Directors: T. J. S. Morgan and Margaret E. Morgan, both of 55, Glanmoor Park Road, Swansea, and R. P. Morgan, "Mathry," Carmarthen Road, Fforestfach, Swansea.

Companies' Returns

Statements of Capital

British Thomson-Houston Co., Ltd.—Capital, £4,000,000 in £1 shares (2,000,000 7 per cent. cumulative preference and 2,000,000 ordinary). Return dated April 3rd. 1,500,000 preference and 2,000,000 ordinary shares taken up. £3,425,310 paid. £74,690 considered as paid. Mortgages and charges: £1,179,350.

British Insulated Cables, Ltd.—Capital, £3,000,000 in £500,000 5½ per cent. "A" preference stock, £500,000 6 per cent. preference stock and £2,000,000 ordinary stock. Return dated April 15th. All stock taken up. £2,572,675 paid on £500,000 "A" preference stock, £372,350 6 per cent. preference stock and £1,700,325 ordinary stock. £427,325 considered as paid on the remainder. Mortgages and charges: £1,000.

Kent Bros. Electric Wire Co., Ltd.—Capital, £40,000 in 11,500 "A" ordinary, 3,500 "B" ordinary and 25,000 preference shares, all of £1. Return dated May 7th. 11,500 "A" ordinary, 2,300 "B" ordinary and 25,000 preference shares taken up. £27,800 paid on 500 "A" ordinary, 2,300 "B" ordinary and 25,000 preference shares. £11,000 considered as paid on 11,000 "A" ordinary shares. Mortgages and charges: Nil.

Gent & Co., Ltd.—Capital, £70,000 in 10,000 preference and 60,000 ordinary shares of £1. Return dated June 10th, 7,427 preference and 48,752 ordinary shares taken up. £13,387 paid on 3,957 preference and 9,430 ordinary shares. £42,792 considered as paid in 3,470 preference and 39,322 ordinary shares. Mortgages and charges: £9,000.

W. J. Furse & Co., Ltd.—Capital, £35,000 in 9,000 preference and 26,000 ordinary shares of £1. Return dated July 8th. 9,000 preference and 22,860 ordinary shares taken up. £12,566 paid on 12,566 ordinary shares. £19,294 considered as paid on 9,000 preference shares and 10,294 ordinary shares. Mortgages and charges: Nil.

Lancashire United Transport & Power Co., Ltd.—Capital, £600,000 in £1 shares (300,000 preference and 300,000 ordinary). Return dated April 10th. 300,000 preference and 276,208 ordinary shares taken up. £101,306 paid. £474,902 considered as paid. Mortgages and charges: £239,225. A further £50,000 of the stock has been deposited as security for possible advances.

South Somerset & District Electricity Co., Ltd.—Capital, £200,000 in 200,000 ordinary shares of £1 each. Return dated March 31st (filed May 7th). All shares taken up. £200,000 paid, plus £6,531 5s. in respect of premiums. Mortgages and charges: Nil.

Salisbury Electric Light & Supply Co., Ltd.—Capital, £125,000 in 125,000 ordinary shares of £1 each. Return dated April 16th (filed June 10th). All shares taken up. £122,500 paid. £2,500 considered as paid. Mortgages and charges: £15,700.

Brentford Electric Supply Co., Ltd.—Capital, £100,000 in ordinary shares of £1 each. Return dated March 24th (filed April 13th). 90,000 shares taken up. £90,000 paid. Mortgages and charges: Nil.

Monks & Byrne, Ltd.—Capital, £2,500 in £1 shares. Return dated May 14th, 1940 (filed April 24th, 1942). 2,000 shares taken up. £1,350 paid. £650 considered as paid. Mortgages and charges: Nil.

Pritchett & Gold, Ltd.—Capital, £200,000 in £1 shares (100,000 preference and 100,000 ordinary). Return dated April 8th. All shares taken up. £30,394 paid. £169,606 considered as paid. Mortgages and charges: Nil.

Increase of Capital

Fisher, Humphries & Co., Ltd.—The nominal capital has been increased by the addition of £10,000 in £1 ordinary shares beyond the registered capital of £20,000.

Receiver Released

Supra Electra Motors, Ltd.—M. Moore of Thames House, Queen Street Place, E.C.4, ceased to act as receiver and/or manager on August 7th, 1942.

Liquidations

Arun Electrical Supplies, Ltd.—Winding up voluntarily. Liquidator, Mr. B. Hennell, 165, Moorgate, London, E.C.

CONTROL

by

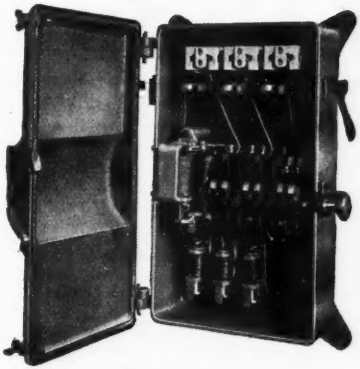
THE VERITY RANGE

AC *Direct On,*
Star Delta,
Rotor and Stator,
Air or Oil Break.

DC *Starters,*
Control Panels,
Constant or Variable
Speed.

FROM STOCK

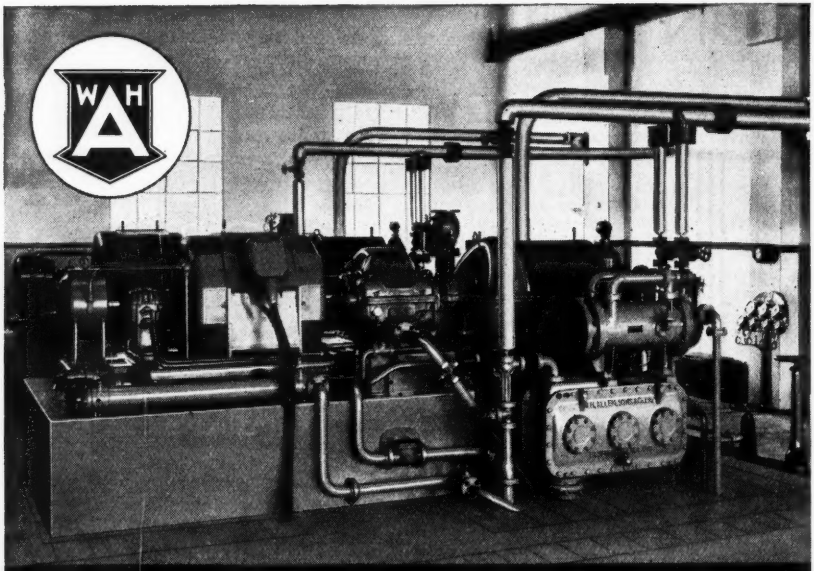
or in few days from receipt of particulars



Air Break Star Delta
with Triple Pole Isolator

VERITYS LTD. ASTON, BIRMINGHAM 6

Sales Headquarters : BRETTENHAM HOUSE, LANCASTER PLACE, W.C.2



ALLEN "AWLINWUN"

CONDENSER-TURBO-GENERATORS

Compact power units occupying the minimum space and effecting savings in building and foundation costs.

Arranged for erection on, and control from, a single floor level.

High operating economy and low maintenance charges.

Designed to meet any steam and exhaust conditions.

Arrangement can be used for straight condensing, pass-out or mixed pressure turbines.

The illustration above shows
Two 400 kW "Awlinwun" Condenser - Turbo - Alternators in a Transvaal (S.A.) Municipal Power Station.

Each set is provided with tandem vertical spindle circulating water and condensate extraction pumps driven through bevel gearing off the steam end of the main turbine shaft. The steam jet air pump is mounted above the condenser water box, and the condenser with its auxiliaries forms therefore a very compact arrangement, the condenser shell itself acting as the baseplate for the turbine.

W. H. ALLEN, SONS & CO., LTD., BEDFORD, ENGLAND

STOCKS AND SHARES

TUESDAY EVENING.

THE Stock Exchange does not officially record the number of bargains transacted in its markets, nor the amounts of stocks and shares that change hands. But the daily markings of prices at which business has been done, give a rough idea of the volume of Stock Exchange activity, and, judging by this standard, there is a good deal going on in the various markets. Investment takes all the good-class stock which is offered, be it gilt-edged or industrial ordinary. Nor are bargains mainly in modest amounts. It is often as easy to deal in a thousand shares as it is in a hundred. The industrial ordinary issues are in consistent demand. The unexpected passing of their interim dividends by two electricity supply companies exercised no unfavourable effect upon the group as a whole.

Home Rails Harden

London Passenger Transport "C" stock has hardened to 46. Other Home Railway stocks show a slightly improving tendency. Money is going into this market because junior issues still offer substantial yields upon current prices. The companies have been in negotiation with the N.U.R. and the Railway Clerks' Association, the two latter bodies claiming increases in wages. The companies have reached an agreement with the Clerks' Association and will, no doubt, effect a compromise on somewhat similar terms with the N.U.R. It is estimated that the rise given to the members of the Clerks' Association will cost about £7¼ million per annum. As the Government is making very substantial profits out of the railways, owing, of course, almost entirely to war conditions, the effect upon dividends is not likely to be felt. What is likely to happen after the war makes a topic for interesting discussion.

Rising Industrials

The British Vacuum Cleaner & Engineering Co. is increasing its dividend to 15 per cent. for the six months to September 30th, 1941; this goes against 10 per cent. for the eighteen months to March, 1941. The increase came unexpectedly, and the price of the shares responded with a rise of 2s. to 17s., business being marked up to 17s. 6d. Brush Electric ordinary shares are better at 6s. 6d., and Crabtrees at 32s. 6d. are again ¼th to the good, the present price comparing with 30s. a fortnight ago. Ever Ready at 32s. 6d. are a few pence better. Revo, Lucas, Ward & Goldstone, and Smiths deferred are all harder.

Shares in companies connected with heavy industries—iron, coal, steel, engineering, etc.—are advancing in favour. Amongst these Vickers have participated in the improvement and at 17s. show a rise of 6d., the yield on the shares at the present price being £5 17s. 8d. per cent. on the money. Babcock & Wilcox, with a rise of 1s. to 43s., have also shared in the growing popularity of this group.

Dominion Securities

The trouble in India, which looked so threatening in the early part of this month, subsided after a further fitful attempt to flare up. What losses were then sustained by the prices of Indian shares, have been regained. Calcutta Electrics are 6d. better at 25s. Cawnpore Electrics at the same price, are ex dividend. Madras Electrics show no change at 18s. 9d. The Canadian group is firm, with Montreal Power shares up ½ at 24, and Shawinigans holding their rise of last week at 15½. Victoria Falls, nominally 72s. 6d., are actually rather better than that, in sympathy with the harder tendency of most South African shares.

Interim Dividends

The County of London Electric Supply Co., has declared an interim dividend of 3 per cent., and its subsidiary, the Bournemouth and Poole Electricity Supply Company, an interim dividend of 5 per cent., both payable on September 30th next. For the full year 1941 the County Company made up its dividend to 8 per cent., the Bournemouth and Poole to 12½ per cent. Two other subsidiaries of the County Company, the South London Electric and the Richmond (Surrey) Electric have decided not to pay interim dividends this time, as against distributions of 3 per cent. and 2 per cent. respectively twelve months ago. The announcements naturally aroused a certain amount of discussion, and, also, of speculation as to whether the companies now passing their interim dividends can be expected to pay for the full year 1942 the same rates as those distributed for 1941.

South Londons fell 1s. 6d. to 25s.; Richmond (Surrey) shares remained at their previous price of 25s. In view of the uncertainty introduced by the passing of the interim dividends, a calculation of the yield offered by the shares might prove to be misleading and is accordingly omitted from our tables.

Annual Progress Reports

The interim dividends have now been declared by most of the electricity supply companies. It is taken for granted that, where the previously-paid interims are repeated, the final dividends for the year will also correspond with those of 1941. For this reason, prices of shares in the electricity supply market hold their ground with consistent strength. Holders are already beginning to ask, by the way, whether it might not

(*Continued on page* 285)

ELECTRICAL INVESTMENTS

Prices, Dividends and Yields

Company	Dividend 1939-40	Dividend 1940-41	Middle Price Aug. 25	Rise or Fall	Yield £ s. d.
Home Electricity Companies					
Bournemouth and Poole	12½	12½	50/-	..	5 0 0
British Power and Light	6	6	27/-	..	4 9 0
City of London	7	7	27/6	..	5 1 9
Clyde Valley	8	8	40/-	..	4 0 0
County of London	8	8	35/-	..	4 11 6
Edmundson's:					
7% Pref.	7	7	33/9	..	4 3 0
Ord.	6	6	28/-	..	4 5 9
Elec. Dis. Yorkshire	9	9	42/-	..	4 5 9
Elec. Fin. and Securities	12½	12½	48/9	..	5 2 6
Elec. Supply Corporation	10	10	45/-	..	4 9 0
Isle of Thanet	2	Nil	11/3	..	—
Lancs. Light and Power	7½	7½	33/9	..	4 9 0
Llanelly Elec.	5½	5½	22/6	..	4 17 9
Lond. Assoc. Electric	4½	4	19/6	..	4 2 1
London Electric	6	6	25/-	..	4 16 0
London Power Red. Deb.	5	5	105½	..	4 14 7
Metropolitan E.S.	8	8	35/-	..	4 11 6
Midland Counties	8	8	38/9	..	4 2 6
Mid. Elec. Power	9	9	42/-	..	4 5 9
Newcastle Elec.	7	7	28/9	..	4 17 5
North Eastern Elec:					
Ordinary	7	7	31/3	..	4 9 7
7% Pref.	7	7	33/6	..	4 3 7
Northampton	10	10	46/3xd	..	4 6 6
Notting Hill 6% Pref. (£10)	6	6	9	..	—
Northmet Power:					
Ordinary	7	7	32/6	..	4 6 2
6% Pref.	6	6	30/6	−6d.	3 18 8
Richmond Elec.	6	6	25/-	..	—
Scottish Power	8	8	38/3	..	4 3 9
Southern Areas	5	5	20/-	..	5 0 0
South London	7	7	25/-	−1/6	—
West Devon	5	5	22/6	..	4 9 0
West Glos.	4½	3½	20/-	..	3 10 0
Yorkshire Elec.	8	8	40/-	..	4 0 0
Overseas Electricity Companies					
Atlas Elec.	Nil	Nil	4/3	..	—
Calcutta Elec.	7*	7*	25/-	+6d.	5 12 0
Cawnpore Elec.	10	10	25/-	−6d.	8 0 0
East African Power	7	7	27/-	..	5 3 8
Jerusalem Elec.	7	5	17/6	..	5 14 4
Kalgoorlie (10/-)	7½	5	7/6	..	6 13 4
Madras Elec.	6*	4*	18/9	..	4 5 4
Montreal Power	1½	1½	24	+½	6 5 0
Palestine Elec. "A"	Nil	4*	21/3	..	3 15 3
Perak Hydro-elec.	6	7	7/6	..	—
Shawinigan Power	83cts.	90cts.	15½	..	—
Tokyo Elec. 6%	6	6	13½	..	—
Victoria Falls Power	15	15	72/6	..	4 2 8
Whitehall Inv. Pref.	5	5	15/9	..	6 7 0

Company	Dividend 1939-40	Dividend 1940-41	Middle Price Aug. 25	Rise or Fall	Yield £ s. d.
Public Boards					
Central Electricity:					
1950-70	5	5	109	..	4 11 9
1955-75	5	5	115	..	4 7 0
1951-73	4½	4½	107½	..	4 3 7
1963-93	3½	3½	103½	..	3 7 8
1974-94	3½	3½	99½	..	3 5 4
London Elec. Trans. Ltd.	2½	2½	96	..	2 12 1
London & Home Counties 1955-75	4½	4½	109	..	4 2 7
Lond. Pass. Trans.:					
A	4½	4½	114½	+1	3 18 7
B	5	5	114½	..	4 7 4
C	3	2⅞	46	+1	6 5 0
West Midlands J.E.A. 1948-68	5	5	110	..	4 11 0
Telegraph and Telephone					
Anglo-Am. Tel.:					
Pref.	6	6	110	..	5 9 1
Def.	1½	1½	26	..	5 15 5
Anglo-Portuguese	8	8	18/3	..	8 15 4
Cable & Wireless:					
5½ Pref.	5½	5½	103	+½	5 6 10
Ord.	4	4	61	+2	6 11 2
Canadian Marconi $1	Nil	4cts.	5/-	..	3 7 0
Globe Tel. & Tel.:					
Ord.	8¼*	5*	27/6	..	3 12 9
Pref.	6	6	27/6	..	4 7 5
Great Northern Tel.:					
(£10)	Nil	Nil	15½	..	—
Inter. Tel. & Tel.	Nil	Nil	3	..	—
Marconi-Marine	7½	7½	28/9	..	5 4 4
Oriental Tel. Ord.	16	10	55/-	+8/9	3 12 9
Telephone Props.	6	Nil	11/3	..	—
Tele. Rentals (5/-)	10	10	9/-	..	5 11 1
Traction and Transport					
Anglo Arg. Trans.:					
First Pref. (£5)	Nil	Nil	3/-	..	—
4% Inc.	Nil	Nil	8½	..	—
Brit. Elec. Traction:					
Def. Ord.	45	45	930	+10	4 16 9
Pref. Ord.	8	8	170	..	4 14 2
Bristol Trams	8	10	46/3	..	4 6 4
Brazil Traction	$1	50c	16¾	−¼	—
Calcutta Trams	8	5½	18/3	..	6 0 9
Cape Elec. Trams	5	5	20/-	..	5 0 0
Lancs Transport	10	10	43/9	..	4 11 4
Mexican Light:					
1st Bonds	5	5	90	..	5 11 1
Rio 5% Bonds	5	5	101	..	4 19 0
Southern Rly.:					
5% Prefd.	5	5	65	..	7 13 10
5% Pref.	5	5	105½	..	4 14 9
T. Tilling	10	10	47/-xd	+6d.	4 5 3
Tilling & B.A.	7*	6½*	55/-	..	2 7 3
West Riding	10	10	38/6	..	5 4 0

(*Continued on next page*)

* Dividends are paid free of Income Tax.

Company	Dividend 1939–40	Dividend 1940–41	Middle Price Aug. 25	Rise or Fall	Yield p.c.
Equipment and Manufacturing					
			£ s. d.		
Aron Elec. Ord. ..	Nil	7½	25/– ..	6 0 0	
Assoc. Elec. :					
Ord.	10	10	46/3 ..	4 6 6	
Pref.	8	8	39/6 ..	4 1 0	
Automatic Tel.&El.	12½	12½	52/6 ..	4 15 3	
Babcock & Wilcox	11	11	43/6 +1/–	5 1 2	
British Aluminium	10	10	44/6 +9d.	4 10 0	
British Insul. Ord.	20	20	93/9 ..	4 5 6	
British Thermostat (5/–)	18½	18½	16/3 ..	5 13 10	
British Vac. Cleaner (5/–)	12½	10	17/– +3/3	—	
Brush Ord. (5/–) ..	Nil	6	6/6 +6d.	4 12 4	
Callender's ..	15	15	72/6 ..	4 2 9	
ChlorideElec.Storage	15	15	72/6 ..	4 2 9	
Cole, E. K. (5/–) ..	Nil	7	14/– ..	2 10 0	
Consolidated Signal	17	17	70/– ..	4 17 2	
Crabtree (10/–) ..	17½	17½	32/6 +⅛	5 7 8	
Crompton Parkinson Ord. (5/–) ..	30	20	21/3 ..	4 14 0	
E.M.I. (10/–) ..	Nil	6	17/– ..	3 10 10	
Electric Construction	10	10	34/6 ..	5 16 0	
Enfield Cable Ord.	12½	12½	53/9 ..	4 13 0	
Elecl. Switchgear (10/–)	10	10	20/– ..	5 0 0	
English Electric ..	10	10	41/3 ..	4 17 0	
Ensign Lamps (5/–)	25	25	16/3 ..	7 13 10	
Ericsson Tel. (5/–)	22*	20*	40/– ..	2 10 0	
Ever Ready (5/–)	40	40	32/6 +3d.	6 3 0	
Falk Stadelmann	7½	7½	23/9xd+6d.	6 6 4	
Ferranti Pref. ..	7	7	27/6 ..	5 1 10	
G.F.O. :					
Pref.	6½	6½	33/9 ..	3 17 0	
Ord.	20	17½	80/– ..	4 7 6	
Greenwood & Batley	15	15	30/– ..	10 0 0	
Hall Telephone(10/–)	10	12½	20/– ..	6 5 0	
Henley's (5/–) ..	20	20	22/6 ..	4 9 1	
4½% Pref. ..	4½	4½	22/6 ..	4 0 0	
Hopkinsons ..	15	15	50/– ..	6 0 0	
India Rubber Pref.	5½	5½	20/– ..	5 10 0	
Intl. Combustion..	32½	30	107/6 ..	5 12 0	
Johnson & Phillips	15	15	60/– ..	5 0 0	
Lancashire Dynamo	20	20	70/– ..	5 14 4	
Laurence, Scott(5/–)	15	12½	9/6 ..	6 11 7	
London Elec. Wire	7½	7½	28/3 ..	5 6 2	
Lucas, J.	15	15	66/3 +⅛	4 10 8	
Mather & Platt ..	10	10	40/– ..	5 0 0	
Met.Elec.Cable Pref.	5½	5½	21/3 ..	5 3 6	
Murex	20	20	96/3 –⅛	4 3 0	
Pye Deferred (5/–)	25	25	17/– ..	7 7 1	
Revo (10/–) ..	20	17½	30/– +⅛	5 16 8	
Reyrolle	12½	12½	58/9 ..	4 5 0	
Siemens Ord. ..	7½	7½	26/3 ..	5 14 3	
Smith, S. (1/–) ..	50	37½	7/6 +6d.	5 0 0	
Strand Elec. (5/–)	2	4	4/6 ..	4 9 0	
Switchgear & Cowans (5/–) ..	15	10	10/– ..	5 0 0	
T.C.C. (10/–) ..	5	5	15/– ..	3 6 8	
T.C. & M... ..	10	10	43/9 ..	4 11 4	
Telephone Mfg.(5/–)	9	9	9/6 ..	4 14 9	
Thorn Elec. (5/–)..	20	20	15/– ..	6 13 4	
Tube Investments	23½	20	85/– ..	4 14 1	
Vactric (5/–) ..	Nil	Nil	6/– ..	—	
Vickers (10/–) ..	10	10	17/– +6d.	5 17 8	
Ward & Goldstone (5/–)	20	20	20/– +1/–	5 0 0	
Westinghouse Brake	10	10	47/6 ..	4 4 2	
Walsall Conduits(4/–)	55	55	37/6 ..	5 17 4	
West, Allen (5/–)	7½	7½	5/9 ..	6 10 5	

* Dividends are paid free of Income Tax.

Stocks and Shares (*continued from page* 253)

be possible for rather fuller information to be permitted in the next batch of annual reports. Nobody would desire to release information which might even in the slightest degree prove of service to the enemy, but there are ways by which shareholders can judge for themselves the progress their company is making, through the provision of statistics valueless to an enemy.

Oriental Telephones

The Oriental Telephone Co. provided a surprise to the Stock Exchange market and, doubtless, to the majority of its shareholders, by publishing a report which showed the company to be so well supplied with liquid assets that if these were divided they would work out to something like 60s. per Oriental Telephone share. As is well known, the company's Far Eastern properties are now in enemy possession, and its previously-owned Indian interests were sold, not long ago, for substantial cash payments. These latter have enabled the company to accumulate an extraordinary amount of money and Government securities, with the result that, as mentioned above, there is something like £3 per share in actual cash for the ordinary, without taking into any account the company's assets in the hands of the Japanese. On the publication of this report, the price of the shares moved up from 46s. 3d. to 55s., the latter being somewhat nominal. The question has arisen as to whether it might not be well for the board to write down the capital and to return part of the money at present in the company's coffers. There is little chance of more than 10 per cent. dividend, if as much as that, during the war.

Stock Exchange Electricity

In company with other users of electricity, the Stock Exchange is now putting into operation a policy of reduction which will have a sensible effect upon the amount used. The Stock Exchange takes its electricity from the City of London and Charing Cross Companies. In addition, it has its own small emergency plant. In the Stock Exchange financial year ended March 25th last, the item "Electric Power, Working Expenses and Maintenance," cost the shareholders £4,497, an increase of about £720.

NEW PATENTS

Electrical Specifications Recently Published

The numbers under which the specifications will be printed and abridged are given in parentheses. Copies of any specification (1s. each) can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2.

1940

10107. "Mechanical power transmission systems." G. R. Higgs and Metropolitan-Vickers Electrical Co., Ltd. June 10th, 1940. (546821.)

1941

1293. "Electric fuse elements." Lawson Beck, Ltd., Artic Fuse & Electrical Manufacturing Co., Ltd., and C. S. Lawson. January 31st, 1941. (546753.)

1340. "Means for enabling a direct-current voltage proportional to a frequency to be obtained." W. W. Triggs (Akt.-Ges. Brown, Boveri & Cie). February 1st, 1941. (546754.)

1402. "Thermionic periodic wave repeaters." Hazeltine Corporation. March 1st, 1940. (546827.)

1734. "Synthetic resinous compositions." British Thomson-Houston Co., Ltd. February 14th, 1940. (546756.)

2051. "Automatic frequency control for wave signal receivers." Hazeltine Corporation. December 30th, 1939. (546830.)

3902. "Totally enclosed dynamo-electric machines." English Electric Co., Ltd., J. Teal, L. Roberts and R. D. Hall. March 22nd, 1941. (Cognate application, 1304/42.) (546760.)

4212. "Photo cathodes." Marconi's Wireless Telegraph Company, Ltd. March 28th, 1940. (546764.)

4283. "Electric valve control circuits." British Thomson-Houston Co., Ltd. March 30th, 1940. (546836.)

4508. "Frequency modulation receiver." Standard Telephones & Cables, Ltd. April 9th, 1940. (546721.)

5166 "Refrigerators." British Thomson-Houston Company, Ltd. April 24th, 1940. (546767.)

5175. "Means, especially in measuring and other instruments, for amplifying movement of relatively movable parts." G. L. Woolnough, K. Wilcox and Metropolitan-Vickers Electrical Co., Ltd. April 22nd, 1941. (546728.)

5534. "Electrical-discharge devices." British-Thomson-Houston Co., Ltd. April 30th, 1940. (546732.)

5667. "Electrically driven auxiliary apparatus for fuel and air supply in boiler houses and the like." J. W. Young and Metropolitan-Vickers Electrical Co., Ltd. May 1st, 1941. (Cognate application, 7450/41.) (546735.)

5722. "Velocity modulated electrical-discharge tube." Standard Telephones & Cables, Ltd. July 13th, 1940. (546771.)

6018. "Electric transformers." British Thomson-Houston Co. Ltd. May 10th, 1940. (546773.)

6026. "Half wave velocity modulation electron discharge tube. Standard Telephones & Cables, Ltd. July 16th, 1940. (546774.)

6483. "Electric flash welding." J. M. Sinclair and S. H. Gordon. May 20th, 1941. (546737.)

6502-3. "Pressure relief devices." British Thomson-Houston Co., Ltd. May 22nd, 1940. (546839-40.)

6631. "Control circuits for vapour electric discharge devices." Westinghouse Electric International Co. July 19th, 1940. (546738.)

7701. "Electrically operated timing devices." Igranic Electric Co., Ltd., J. R. Taylor and S. R. Wright. June 18th, 1941. (546777.)

7760. "Stands for electric heaters and other articles." W. F. Almond. June 19th, 1941. (546778.)

7890. "Electric limit switches." G. W. King, Ltd., and D. M. King. June 23rd, 1941. (546791.)

7932. "Reconditioning of welder electrodes." Briggs Manufacturing Co. December 2nd, 1940. (546792.)

8086. "Electric valve control systems." British Thomson-Houston Co., Ltd. June 29th, 1940. (546845.)

8104. "Moving-coil voltage regulating transformers." Asea Electric, Ltd. and A. Schaanning. June 27th, 1941. (546793.)

8280. "Cathode-ray tubes." Hazeltine Corporation. July 25th, 1940. (546846.)

8661. "Automatic reclosing circuit-breaker systems." British Thomson-Houston Co., Ltd. July 11th, 1940. (546798.)

8789. "Electrode supporting structure for electric arc furnaces." W. W. Groves (W. E. Moore). July 11th, 1941. (546848.)

8794. "Dry contact electric rectifier and rectifier system." Westinghouse Electric International Co. July 12th, 1940. (546849.)

9386. "Control system for vapour electric-discharge devices." Westinghouse Electric International Co. August 2nd, 1940. (546850.)

9393. "Filament mounting machines for electric lamps." British Thomson-Houston Co., Ltd. July 24th, 1940. (546803.)

9521. "Preventing singing in telephone repeaters." Standard Telephones & Cables, Ltd. August 3rd, 1940. (546806.)

9699. "Phosphorus copper alloys." Westinghouse Electric International Co. July 31st, 1940. (546851.)

9801. "Telephone control circuits." Standard Telephones & Cables, Ltd. August 8th, 1940. (546808.)

10131. "Devices comprising a high-pressure metal-vapour discharge tube and a reflector." Philips Lamps, Ltd. (Naamlooze Venootschap Philips' Gloeilampenfabrieken.) August 8th, 1941. (546810.)

12223. "Methods of making metal-enclosed vacuum tubes." British Thomson-Houston Co., Ltd. September 21st, 1940. (546815.)

12351. "Multi-position electric switches." British Thomson-Houston Co., Ltd. September 28th, 1940. (546816.)

1942

3105-7. "Mechanical power transmission systems." G. R. Higgs and Metropolitan-Vickers Electrical Co., Ltd. June 10th, 1940. (Divided out of 546821.) (546856-8.)

CONTRACT INFORMATION

Accepted Tenders and Prospective Electrical Work

Contracts Open

Where "Contracts Open" are advertised in our "Official Notices" section the date of the issue is given in parentheses.

Australia. — TOWNSVILLE (QUEENSLAND).—November 19th. City Council. Water-tube boiler of not less than 36,000 lb. per hr. evaporative capacity at a pressure of 200 lb. per sq. in. Specifications (£1 1s.) from A. Robertson, Town Clerk.

East Riding.—August 31st. County Education Committee. Electric lighting and heating installations in 40 air-raid shelters. Specifications from county architect, County Hall, Beverley. Tenders to Clerk of Council.

Normanton.—August 31st. Urban District Council. One 2-ton electric vehicle complete with battery charger. (July 31st.)

Orders Placed

Cardiff.—Electricity Committee. Accepted. Vehicle battery (£131).—Chloride Electrical Storage Co. Cables (£298).—Pirelli-General Cable Works. Coal plant apparatus (£1,215).—Fraser & Chalmers deaerator equipment (£1,775).—Hick, Hargreaves.

Darlington.—Corporation. Accepted. Traction rectifiers (£2,620).—Hewittic Electric Co. Electric blower at the carburetted water gas plant (£905).—Humphreys & Glasgow, Ltd.

Glasgow. — Health Committee. Accepted. "Inductotherm" for the Southern General Hospital (£95).—Victor X-Ray Corporation.

London. — STOKE NEWINGTON. — Electricity Sub-Committee. Accepted. Repairing and reconditioning 46 washboilers (£112).—Universal Boilers and Engineering Co. Two three-phase meters for supplies to welding plant (£17 15s. 9d. each, plus certification fee).—Aron Electricity Meter.

Middlesbrough. — Corporation. Accepted. Cables.—Britannic Electric Cables.

Stockton.—Corporation. Accepted. Electric goods lift at the Corporation Quay warehouse.—Pickerings.

Contracts in Prospect

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Ancoats.—Office and boiler house; J. Bailey, builder, 72, Market Street, Droylsden, near Manchester.

Ashton-under-Lyne.—Alterations to St. John's Lower School, Hurst, for E.C.; E. Marshall & Sons, builders, Stamford Saw Mills, Cockbrook, Ashton-under-Lyne.

Belper.—Houses, rural districts; G. A. Dawes, clerk, R.D.C. Offices.

Billingham-on-Tees.—Pump building for U.D.C.; S. Coates, Ltd., builders, Middlesbrough.

Buckingham.—British Restaurant (£600) for R.D.C.; surveyor, Chandos House.

Byermoor (Co. Durham).—Canteen; L. J. Couves and Partners, Westfield Terrace, Gosforth, Newcastle.

Cardiff.—Report centre £2,000); city engineer.

Chadderton.—Canteen, Manor Spinning Mill; Lancashire Cotton Corporation, Ltd., Blackfriars House, Manchester 3.

Croydon.—School shelters and improvements (£14,500); borough engineer.

Darlington.—Canteen and ambulance room for the Cleveland Bridge & Engineering Co., Ltd.; W. S. Hutton, Ltd., builders, Post House Wynd, Darlington.

Compressor house; Bussey and Armstrong builders, Brinkburn Road, Darlington.

Meter house; Darlington Rolling Mills, Ltd.

Dudley.—Convalescent home, Cawney Bank House; Secretary, Guest Hospital, Tipton Road, Dudley.

Duffield.—Parish hall; H. F. Hawley, chairman, Parish Council, Duffield, near Derby.

Enfield.—Welfare centre, Enfield Cable Works; J. Forrester.

Frome.—British Restaurant, Cork Street; U.D.C. surveyor, Christchurch Street.

Grimsby.—Buildings for temporary school premises (£2,400); L. W. Heeler, town clerk, 9, New Street.

Hathershaw.—Canteen at Cotton Mill; Iris Mill, Ltd., cotton spinners, Iris Mill, Hathershaw, near Oldham.

Hetton-le-Hole (Co. Durham).—British Restaurant, Easington Lane, for Urban Council; J. Butterworth, surveyor, U.D.C. Offices, Hetton-le-Hole.

Hinckley.—British Restaurants; A. S. Atkins, clerk, 16, Station Road.

Hulme.—Workshop, motor engineering works; W. Thorpe & Son, Ltd., builders, Chester Road, Cornbrook, Manchester, 16.

Leigh.—Installation of electric pumps for drainage works, Lime Pits area; engineer, South Lancashire Rivers Board, County Offices, Preston.

Omnibus garage and centre for T.C.; T. A. Clare, borough surveyor, Town Hall.

Extension; Victoria Garages, Ltd.

Garage and bus centre; T. A. Clare, borough surveyor, Town Hall.

Manchester.—Dairy; J. Roberts & Son, dairymen, 111, Humphrey Road, Manchester, 16.

Factory for Blooms, costumiers; A. Isaacs, architect, 136, Middleton Road, Crumpsall.

Works canteen, Trafford Park Road; Co-operative Wholesale Society, Ltd., 1, Balloon Street.

Middlesbrough.—Shelter at Remand Home for the T.C. (£600); borough engineer.

Middlesex.—Conversion of "The Furze," Hillingdon, for accommodation of maternity cases (£9,500), for Middlesex C.C.; county architect, Middlesex House, 20, Vauxhall Bridge Road, S.W.1.

Middleton.—Canteen, Warwick Cotton Mills; Combined Egyptian Mills, Ltd., 26, Cross Street, Manchester, 2.

Newport (Salop).—Improvements, Isolation Hospital, for U.D.C.; R. C. Bryan, surveyor, Council Offices, Newport.

Northampton.—Canteen, Countess Road; Hanwell Engineering Co., Ltd.

Nottinghamshire.—Hospital kitchen extensions, etc., at County Institution, Mansfield; E. W. Roberts, county architect, Shire Hall, Nottingham.

Old Trafford.—Office and store, 3, Seymour Grove; E. Fitton & Co., Ltd., heating specialists, 295, Chester Road, Manchester, 15.

Renfrew.—Conversion of Monkdyke House for use as Council offices; J. Steel Maitland, architect, County Place, Paisley.

Sheffield.—New cooking centre, Mundella Place; W. G. Davies, city architect, Town Hall.

Tamworth.—Canteen, Dexter Colliery; Kingsbury Collieries, Ltd., Colliery Offices.

Urmston.—Works additions; B. Waterhouse, architect, 134, Deansgate, Manchester.

Persian Electrical Imports

Substantial Rise in 1940-41

WAR and political reform have brought prosperity to Persia. Encouragement of private trading has resulted from the cancellation of a number of State monopolies, and the new Government has been following a much more enlightened policy towards industry generally than did the old. In particular it has been showing an active and practical interest in agriculture. Textile, sugar and other factories have been thriving and there has been great improvement in communications.

Foreign trade returns for the twelve months ended with March, 1941, have recently reached this country. They show that in that period imports were twice the volume of 1939–1940. Exports (excluding oil products) were 50 per cent. up on the previous year, but those of oil products were down by about 12 per cent. In the accompanying table the value of the imports of electrical machinery and apparatus is shown together with a note of increase or decrease compared with 1939–40. (The exchange value of the rial averaged about 3½d.)

The dominant position held by Germany is evident. Britain's share, though small, shows an advance in power plant. The competition of Russia in machinery and lamps is particularly noteworthy.

	Rials (000) 1940–41	Inc. or dec. on 1939–40
Motors, dynamos, convertors, etc.—		
Less than 100 kg.		
Total	1,017	+ 14
From Germany	805	— 32
„ Great Britain	79	+ 72
„ United States	46	+ 9
Ditto, 100–500 *kg.*		
Total	1,273	— 50
From Germany	1,122	+ 46
„ Soviet Russia	46	+ 2
Ditto, 500–1,000 *kg.*		
Total	587	— 232
From Germany	557	+ 85
„ Great Britain	20	+ 13
Ditto, over 1,000 *kg.*		
Total	5,619	+ 1,206
From Germany	4,372	+ 273
„ Soviet Russia	681	+ 368
„ Great Britain	467	+ 341
Electric lamps—		
Total	3,447	+ 293
From Germany	3,023	+ 1,115
„ Soviet Russia	248	+ 248
Insulating tubes—		
Total	39	— 206
Domestic and heating appliances, such as irons, cookers, fans, stoves, and refrigerators—		
Total	4,171	— 1,624
From Germany	2,723	+ 1,646
„ United States	492	— 2,387
„ Great Britain	600	— 950
Electro-medical appliances—		
Total	23	+ 4
Other electrical appliances—		
Total	301	+ 123
From Germany	248	+ 115
Radio valves—		
Total	262	+ 159
From Germany	156	+ 137
„ United States	63	+ 23
Other parts for radio—		
Total	166	+ 85
From Germany	112	+ 73
„ United States	30	+ 18
Telegraph material—		
Total	998	— 104
From Germany	904	+ 466
„ Great Britain	61	— 354
Telephone material—		
Total	1,387	+ 248
Accumulators and parts—		
Total	645	+ 369
From Germany	566	+ 337
„ United States	66	+ 56
Dry batteries—		
Total	811	+ 184
From Germany	777	+ 313
„ United States	12	— 139
Other batteries—		
Total	29	— 54
Unspecified electrical material—		
Total	4,429	+ 487
From Germany	3,507	+ 507
„ United States	606	+ 163
„ Great Britain	43	— 7
„ Soviet Russia	120	— 20

Gazetted

CONGRATULATIONS to those who by their merit are being promoted in the army of industry. Such men are accelerating the attainment of total war production.

A virile outlook in tune with the aspirations of these rising executives has been brought to industry by the Simmonds Organisation. Its revolutionary products have frequently proved in diverse branches of British engineering the surest stepping stones to real economy and progress.

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Seven men left the sinking ship, smashed by a German raider. Most of them were wounded, some gravely. As the mate wrote in the log, they had "British Determination," but their needs were great and their equipment was inadequate — a small boat, little first-aid kit, practically no food and only three gallons of water. Wounds and weather, hunger and thirst claimed five of them. After seventy terrible days—sailing more than 2,000 miles—two were saved. Their adventures live as an epic of the sea.

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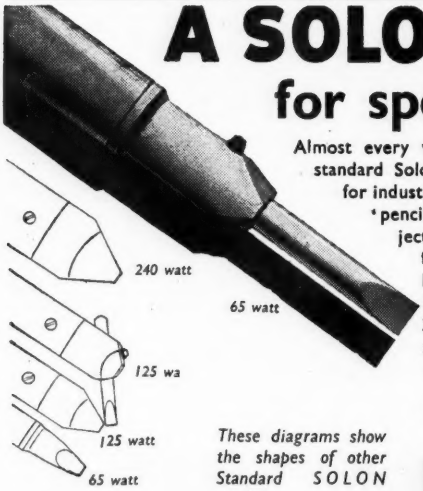

These diagrams show the shapes of other Standard SOLON models.

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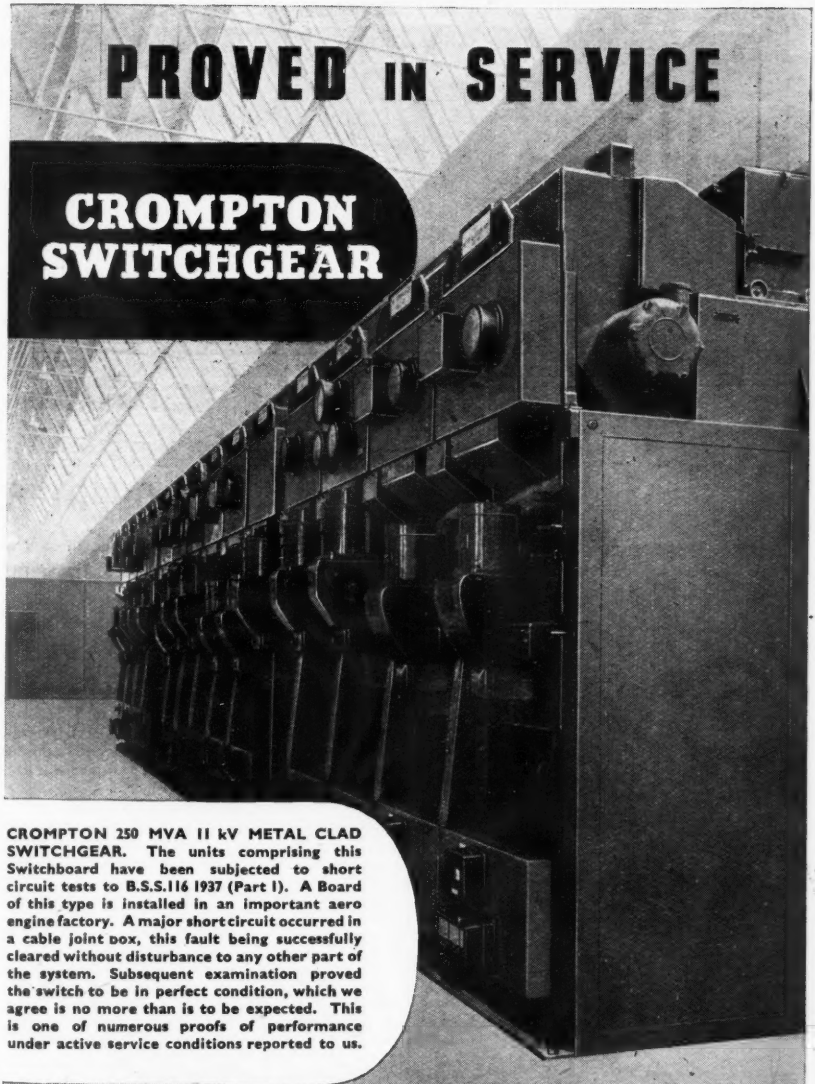

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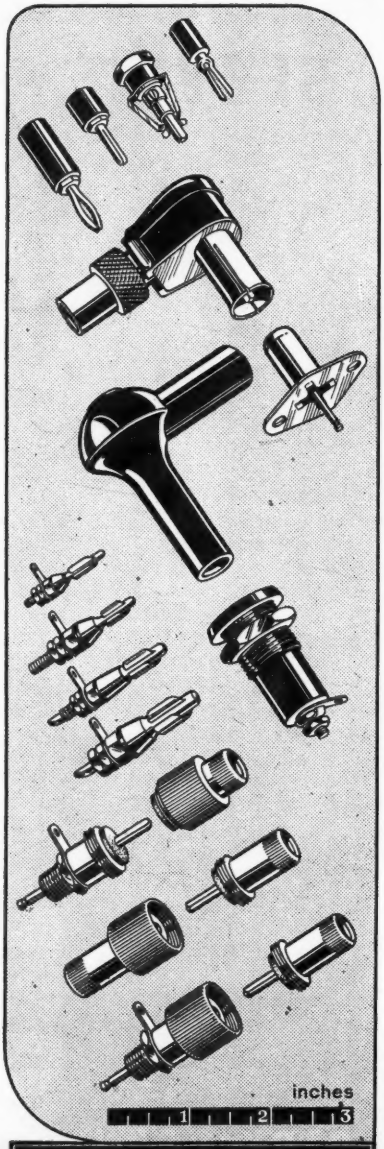

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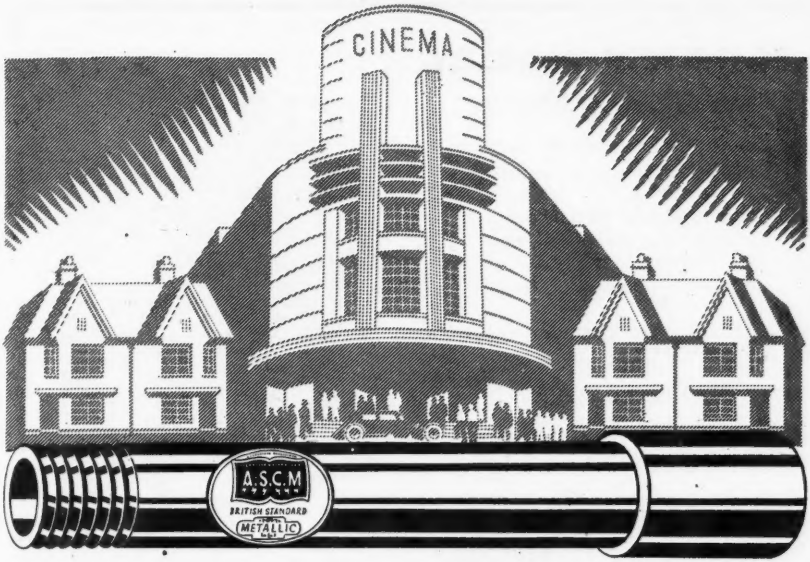

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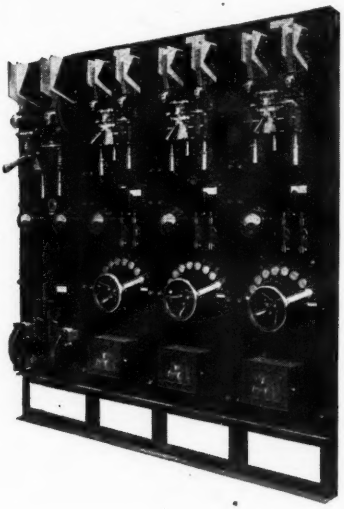

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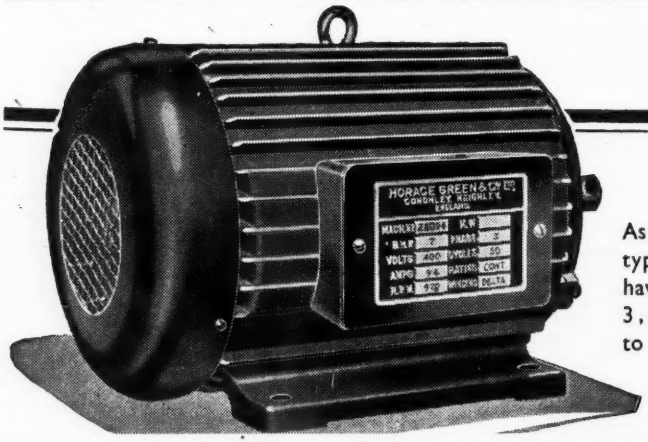

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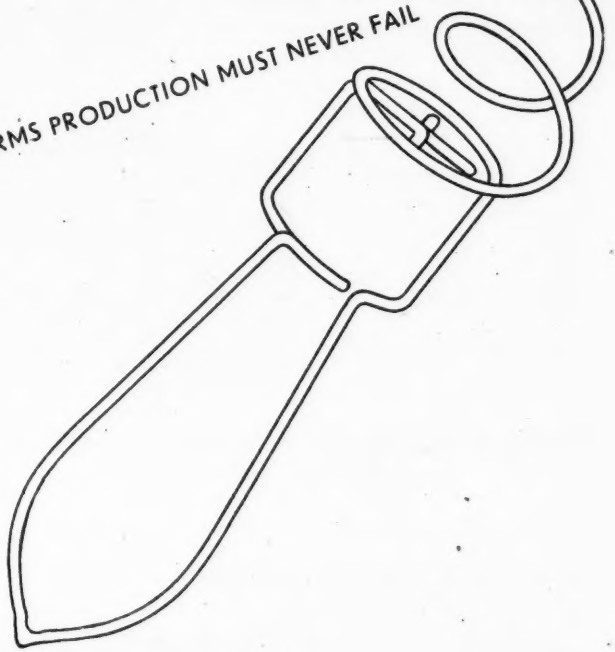

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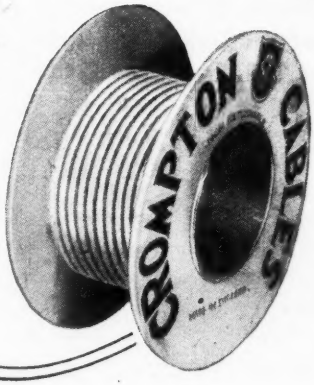

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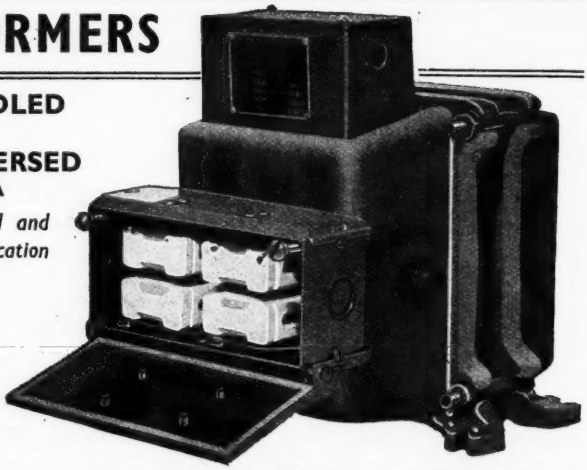

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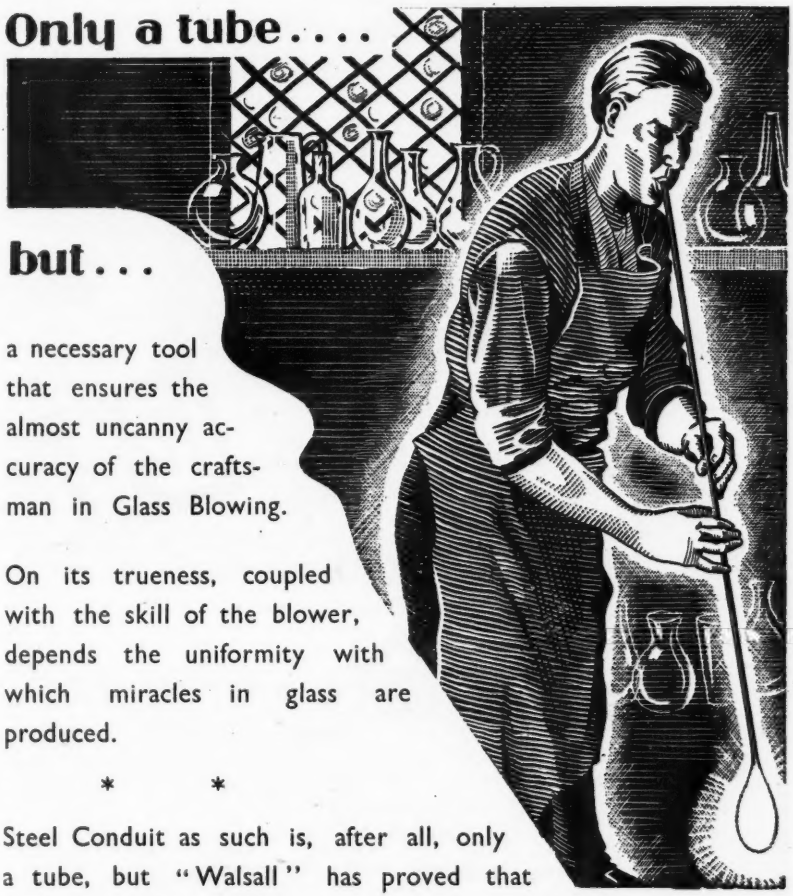

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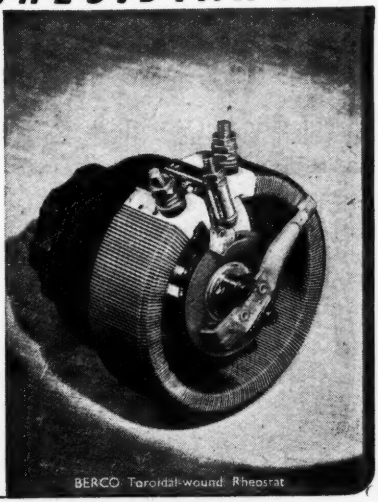
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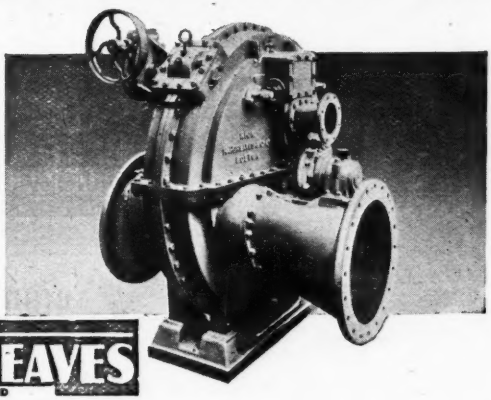

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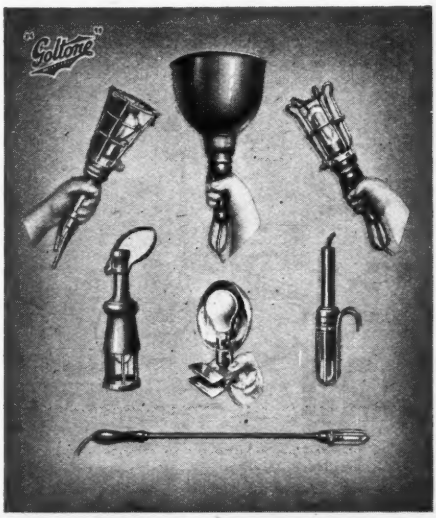

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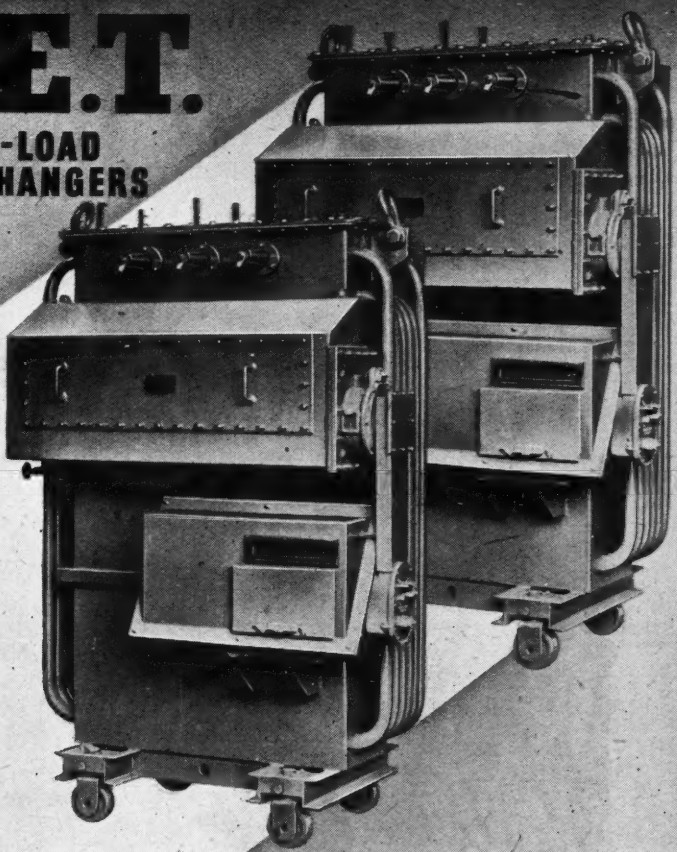

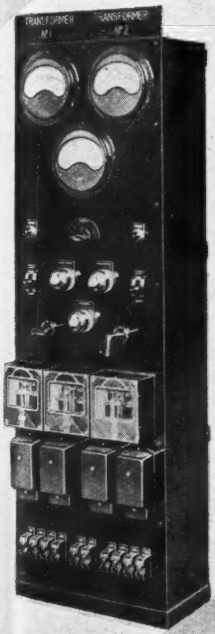

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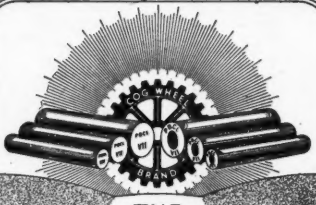

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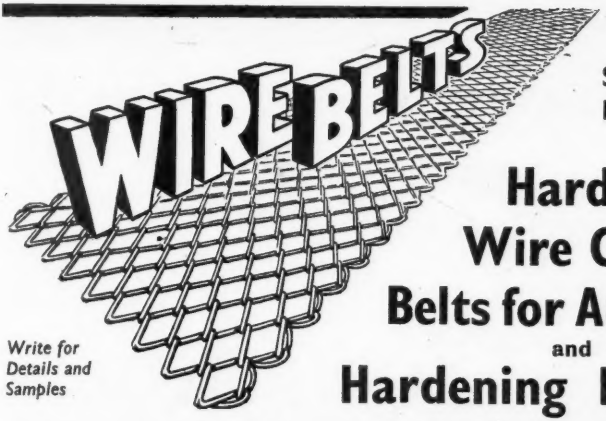

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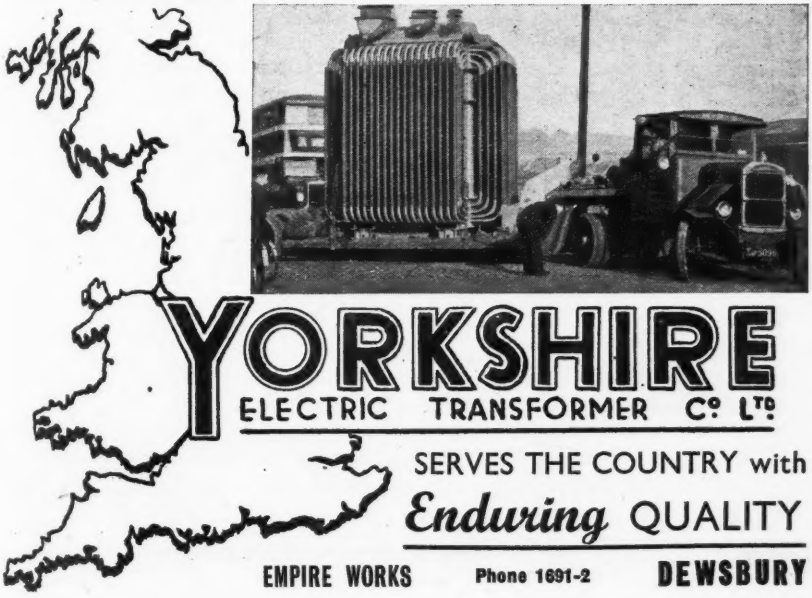

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